March-April
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Issue 3

The Observer

The Newsletter of Central Valley Astronomers of Fresno

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CVA Calendar

May 7-RiverPark Public starparty

May 14-CVA meeting 7pm CSUF

May 28-CVA Starparty site TBA

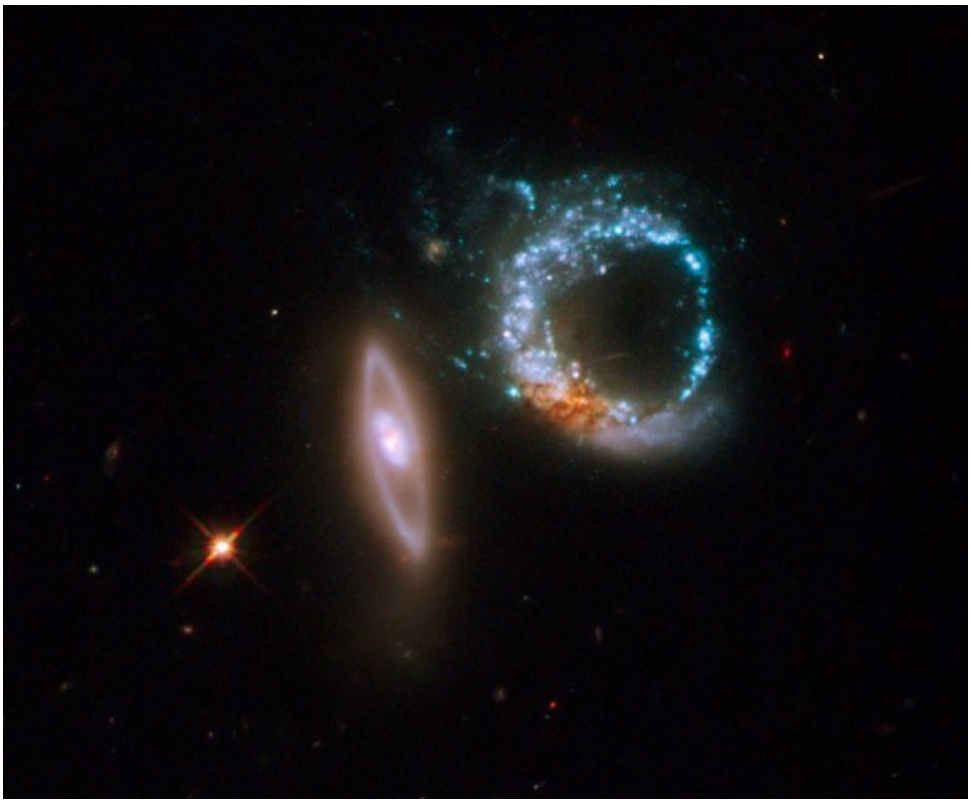
June 3,4,5 CVA Starparty at Courtright Reservoir

June 4-Starparty at Eastman Lake

June 11-RiverPark public star party

June 18-CVA monthly meeting 7pm CSUF

June 24, 25, 26--CVA Starparty at Courtright Reservoir



Astronomical Object of the Month-

This image was too good to pass up: Arp 147, taken by the Hubble Space Telescope in 2008. It depicts two rare ring galaxies; astronomers believe that the one on the right passed through the left one, disrupting and rearranging the star fields of both. Arp 147 lies in the constellation Cetus, and is 400 million light years away. More Hubble images are inside.
Image from NASA/HST

Astronomical Quote of the Month-

"Astronomy is a science in which the exact truth is even stranger than fiction, in which the imagination ever labours panting and breathless behind the reality, and about which one could hardly be prosaic if one tried."

English astronomer James Jeans, in 1925, commenting on Edwin Hubble's discovery of the "island universes"

● New Moon May 3 ○ Full Moon May 17 ● New Moon June 1 ○ Full Moon June 15

CVA at Glacier Point-July 29-30, 2011!

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The President's Message

Hi everyone! I hope you all had a fine Easter holiday. The weather was wonderful; we had our share of rain last month. Trees and flowers are blooming once more, pheromones and testosterone is flailing madly about outside. What more could one ask for?

Well, how about a congenial dark sky site to observe from? We still won't have Eastman Lake available until late June or July. Engineers found another length of the protective barrier from rock slides that needs repair. (Steve Harness said he leaned against a pole and it sipped and broke. OK…)

So, it is starting to look like Hensley Lake for the next couple of months. We don't know if the gate closure times have switched from 6:30 yet. It seems to me that later in the year they still closed at 7:00. Big deal. A few of us are chronically late getting last-minute items ready. The early closure forces us to adjust our schedules. Sometimes that's a good thing. It allows astronomers more time to set up their equipment, chat with friends, and prepare a night program.

How many of you have prepared a program, only to find something interesting gather your attention, and the whole program schedule gets messed up? I have, especially when a new comet discovery is available to observe or an unusual planetary feature is noticed. I guess that's the fun, and the consequence, of being an astronomer.

Lately, I've noticed a diminishing number of CVA'ers attending our monthly meetings. Meetings are always planned to not only go over the visit programs, but also to spread news from our club members. For instance, Garret Wimer told us last month he will be having another astronomy yard sale May 21st at his home. This is more than a yard sale- these turn into fun events, with food and drinks. He always has great stuff and fair prices for his excess items, like eyepieces and homebuilt telescopes.

Members and special guests give PowerPoint and other presentations that involve interesting topics about space, astronomy, and space-related themes. For instance, I made a presentation on Extra Solar planets in January, and Steve Harness told us February about the Night Sky Network and presented certificates and pins from Night Sky to River Park participants. (And later to Dave Artis for his contribution upgrading our 0.5 meter standard Dobsonian to a modern truss-type compact Dobsonian). The March meeting was special in that club newsletter writer and space historian Larry Parmeter told us about the Space Shuttle Program, past, present, and future. I again presented a PowerPoint at the April meeting on the WISE (Wide-field Infrared Survey Explorer) mission.

So as you can see, we are all working toward giving members and guests a memorable and educational experience on top of providing access to dark sky sites, while interacting with the public and students at our River Park and Dark Sky star parties.

I know all too painfully as you do that the cost of driving could be prohibitive for some. I only hope that you will continue to support our efforts to give many people first-hand and sometimes, first-time looks at the Sun, Moon, and Deep Sky. Please join us at any events you can, and consider joining us at the meetings to meet old friends, and maybe even learn something new.

-Randy

The Observer is the newsletter of Central Valley Astronomers of Fresno, est 1952

Our Goals:

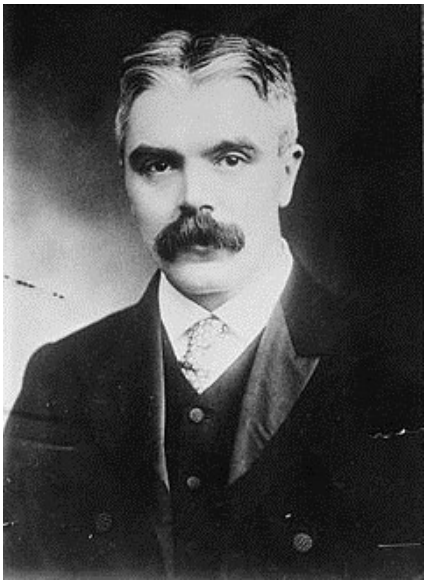
- Provide a place for those interested in astronomy to come together and share their hobby
- Share the wonders of astronomy with the public
- Be a source of astronomy education and information for our schools, the public, and the media

Our Interests:

- To learn about astronomy and related topics
- To enjoy the nights sky with the unaided eye, telescopes, and binoculars
- To learn from others and share what we known about astronomy from others

Profiles in Astronomy

Frank Dyson 1868-1939



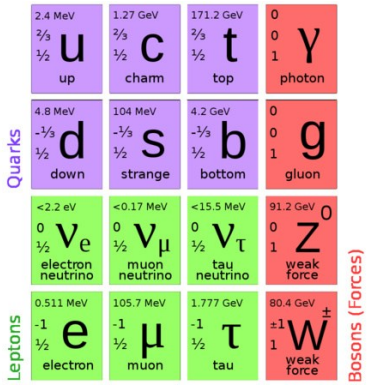
Dyson was born in Measham, England, the son of an Anglican minister. After grammar and secondary schools, he attended Trinity College, Cambridge, where he majored in mathematics and astronomy. Afterwards, he worked as a solar astronomer at the Royal Observatory in Scotland, and was its director from 1905 to 1910. In 1910, he was appointed Astronomer Royal and made director of the Royal Astronomical Observatory in Greenwich, England, a position he would hold until 1933. Among other things, he introduced the first pendulum-free clock at Greenwich, which led to extremely accurate timekeeping, and also set up the first radio broadcasts of timekeeping signals in 1928.

Dyson's specialty was solar astronomy. He was a pioneer in spectroscopic studies of the Sun, focusing on the corona. He is best known for his expedition to West Africa during the 1919 total solar eclipse, in which the famous English astrophysicist Arthur Eddington verified Einstein's theory of light being bent by a mass with large gravity(Dyson actually had Eddington go on the trip to keep him out of prison. Eddington, England's most distinguished scientist at the time, was a Quaker and a pacifist who refused to participate in the war effort during World War I. After the war, government wanted to put him on trial for disloyalty, for his insistence on retaining contacts with German scientists during the conflict, Dyson quickly arranged for him to go on the eclipse expedition; by the time Eddington got back to England a few months later, the charges had been dropped). Dyson also headed a major study of the proper motion of the stars in the northern hemisphere, and participated in the international *Carte du Ciel* program in the late 1800s, the first attempt to photograph the entire sky at night.

In 1939, Dyson was on a ship from England to Australia when he died, and was buried at sea. A crater on the Moon is named for him, as is minor planet 1241 Dyson.

Fermilab: New Particle found-Maybe

Scientists at the Fermilab National Accelerator facility near Chicago announced on April 5 that they have evidence for a completely new particle, one that is not part of the so-called Standard Model, which could overturn accepted theories about the building blocks of the universe. Using the Tevetron, Fermilab's most powerful atom smasher, they noted the signature of an unknown particle that spun away and lasted far longer than accepted under current theory. The scientists involved do not know what it is; they acknowledge that it could be simply a data anomaly, but say that the chances of that are very small. They emphasize that it is not the long sought after Higgs Boson, the so-called "God Particle," that, in theory, gives mass to all other particles. Some speculate that it is a particle that is in fact part of the Standard Model, just not accounted for yet. Others, though, see it as something entirely new, which may force particle physicists to revise the Standard Model. A few believe that it may be evidence of a fifth force, to go along with the strong and weak forces, electromagnetism, and gravity; or that it might even be the first glimpse of the mysterious Dark Matter that supposedly makes up over 90% of the universe. Particle physicists are hoping that CERN's Large Hadron Collider, the most powerful in the world, will find more evidence of this particle when it comes back into operation later this year. Ironically, Fermilab's Tevatron is currently scheduled to shut down in October due to lack of funding. Perhaps this discovery will make people realize that it still has things to find.



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
May 1	2	3 New Moon 	4	5 50th anniversary of first American spaceflight-Freedom 7	6	7 Riverpark public star party
8 Mother's Day	9	10	11	12	13	14 CVA monthly meeting 7pm CSUF
15	16	17 Full Moon 	18	19	20	21 Cosmic background radiation discovered 196 Armed Forces Day
22	23	24	25	26	27	28 Starparty- site TBA
29 1919 solar eclipse-Einstein's theory of general relativity proven	30 Memorial Day	31	June 1 New Moon-Partial solar eclipse 	2	3 CVA weekend star party at Courtright Lake	4 CVA star party at Eastman Lake
5	6	7	8	9	10	11 Riverpark public starparty
12	13	14 Flag Day	15  Full Moon-Lunar eclipse-not visible from N. America	16	17	18 CVA monthly meeting 7pm at CSUF
19 Father's Day	20	21 Summer Solstice	22	23	24 CVA weekend star party at Courtright Lake	25
26	27	28	29	30 Anniversary of the Tuskunga Event in Siberia-1908	July 1	2

Join CVA at Glacier Point Yosemite July 29-30, 2011
For more information-contact Dave Dutton at twodocs@sierratel.com

What's New in Space

Space –X Unveils its Heavy Lift Rocket

On March 30, Elon Musk's Space-X revealed a heavy lift version of its Falcon rocket, labeled the Falcon HL. It will use the Falcon 9 as the core booster, and have two detachable boosters attached to it, for a total of almost four million pounds of lift -off thrust. Space-X says that it will be able to boost 120,000 pounds of payload into low Earth orbit; NASA officials called it the most powerful booster since the Saturn 5 Moon rocket of the 60s and 70s.Space-X plans to have the Falcon HL operational by 2013; the initial flights will be launched from Vandenberg Air Force Base in California, but eventually the rocket will also be launched from Cape Canaveral in Florida. Space -X also announced that its Dragon capsule, which will start carrying supplies to ISS at the end of this year, will be ready for manned flight by early 2014. The company is hoping to get a NASA contract to carry astronauts to and from the space station once it can prove that the manned version of Dragon is safe and reliable.

In the Meantime, Work on Orion goes on

Just a few days before the Space-X announcement, Lockheed announced that the first Orion capsule is almost complete and ready to undergo testing prior to a possible unmanned test launch. Even though the Orion program was officially cancelled in October 2010, the company has continued work on the capsule, both as a private project, and a continued partnership with NASA, which still hopes to use it for manned flights, to ISS and possibly beyond. President Obama killed the Constellation moon program, but many in NASA still feel that it can be used for eventual trips to the Moon, and possibly to Mars as well. Now that it is in private hands, work on Orion is going very rapidly, and the first unmanned test launch may be as early as 2013, with manned flights in 2015. Like Space-X, Lockheed also hopes to win a NASA contract for manned flights to ISS, using the Orion and the Atlas 5 booster rocket.

Mars Curiosity getting final patdowns prior to Launch


NASA's new Mars rover - Curiosity - Landing date August 2012

Engineers at the Jet Propulsion Laboratory in Pasadena are running the next Martian rover, Curiosity, through final tests before shipping it to the Kennedy Space Center for an October launch to the Red Planet. Curiosity, which vaguely resembles the earlier rovers Spirit and Opportunity, but is twice as large, will carry sophisticated scientific equipment, including a drill for rock and soil samples, and a laser to zap distant boulders and rocks. Powered by plutonium nuclear reactor units, Curiosity will be able to travel up to 40 miles from its landing site. The rover, which was originally scheduled to be launched in 2009, has been delayed for almost two years because on engineering problems.

NASA Commemorates the End of the Shuttle Era

On April 12, 2011, the 30th anniversary of the first shuttle launching, NASA chief administrator Charles Bolden paid tribute to the Shuttle program, and revealed where the shuttle orbiters will be taken. Bolden, a former Shuttle pilot himself, praised the program as a great step into the space age, and said that, with the last flight scheduled for late June, the shuttle missions would be missed. At the same time he announced that Discovery, which made its last flight in December, will be displayed at the Smithsonian Institution's Air and Space Museum branch center near Dulles International Airport outside Washington, D.C. Endeavour, after it makes its last flight at the end of April, will go to the California Space and Science Center in Los Angeles, and Atlantis will stay at the Kennedy Space Center's visitor's complex. Enterprise, the shuttle that was used for testing in the 1970s, will be moved from the Air and Space Museum to the Intrepid Sea, Air, and Space Museum in New York City. To the future owners and caretakers of the shuttles, Bolden said, "take good care of our vehicles. They served the nation well..."

The July-August 2011 issue of *The Observer* will look back at the Space Shuttle Program

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ATK Enters the Commercial Space Sector with Liberty

ATK(Alliant TechSystems) announced in March 2011 that it is building Liberty, a two stage rocket that will be a hybrid of the now-cancelled Ares I and the French Ariane 5. ATK, which managed the Shuttle program for NASA, and was expected to manage the Constellation program as well, has teamed up with the French-European aerospace company Astrium to build Liberty, which they say will be operational by 2015. Liberty, which will be able to put 44,500 pounds of payload into low Earth orbit, will have a five segment solid rocket booster from the shuttle as its first stage, and parts of the Ariane 5 as its second stage. ATK officials say that Liberty will be capable of putting unmanned and manned spacecraft into LEO, and is especially looking to win contracts for the manned Lockheed Orion and Sierra-Nevada's Dreamchaser. ATK says that the first test launch of Liberty will come as early as 2013, and will be ready for manned launches by 2015. Liberty is being funded partly by NASA as part of its emphasis on commercial space transportation. All of its launches will take place at the Kennedy Space Center.

The Number of Extra-Solar Planets Found as of April 2011-544
How Many More are out There?

NASA TELESCOPES HELP DISCOVER SURPRISINGLY YOUNG GALAXY

Astronomers have uncovered one of the youngest galaxies in the distant universe, with stars that formed 13.5 billion years ago, a mere 200 million years after the big bang. The finding addresses questions about when the first galaxies arose, and how the early universe evolved.

NASA's Hubble Space Telescope was the first to spot the newfound galaxy. Detailed observations from the W.M. Keck Observatory on Mauna Kea in Hawaii revealed the observed light dates to when the universe was only 950 million years old; the universe formed about 13.7 billion years ago.

Infrared data from both Hubble and NASA's Spitzer Space Telescope revealed the galaxy's stars are quite mature, having formed when the universe was just a toddler at 200 million years old.

"This challenges theories of how soon galaxies formed in the first years of the universe," said Johan Richard of the Centre de Recherche Astronomique de Lyon, UniversitÃ© Lyon 1 in France, lead author of a new study accepted for publication in the Monthly Notices of the Royal Astronomical Society. "It could even help solve the mystery of how the hydrogen fog that filled the early universe was cleared."

This galaxy is not the most distant ever observed, but it is one of the youngest to be observed with such clarity. Normally, galaxies like this one are extremely faint and difficult to study, but, in this case, nature has provided the astronomers with a cosmic magnifying glass. The galaxy's image is being magnified by the gravity of a massive cluster of galaxies parked in front of it, making it appear 11 times brighter. This phenomenon is called gravitational lensing.

"Without this big lens in space, we could not study galaxies this faint with currently available observing facilities," said co-author Eiichi Egami of the University of Arizona in Tucson. "Thanks to nature, we have this great opportunity to see our universe as it was eons ago."

The findings may help explain how the early universe became "reionized." At some point in our universe's early history, it transitioned from the so-called dark ages to a period of light, as the first stars and galaxies began to ignite. This starlight ionized neutral hydrogen atoms floating around in space, giving them a charge. Ultraviolet light could then travel unimpeded through what had been an obscuring fog.

The discovery of a galaxy possessing stars that formed only 200 million years after the big bang helps astronomers probe this cosmic reionization epoch. When this galaxy was developing, its hot, young stars would have ionized vast amounts of the neutral hydrogen gas in intergalactic space. A population of similar galaxies probably also contributed to this reionization, but they are too faint to see without the magnifying effects of gravitational lensing.

NASA's James Webb Space Telescope (JWST), scheduled to launch later this decade, will be able to see these faint galaxies lacking magnification. A successor to Hubble and Spitzer, JWST will see infrared light from the missing population of early galaxies. As a result, the mission will reveal some of our universe's best-kept secrets.

"Seeing a galaxy as it appeared near the beginning of the universe is an awe-inspiring feat enabled by innovative technology and the fortuitous effect of gravitational lensing," said Jon Morse, NASA's Astrophysics Division director at the agency's headquarters in Washington.

"Observations like this open a window across space and time, but more importantly, they inspire future work to one day peer at the stars that lit up the universe following the big bang."

From NASA.com April 12, 2011

Don't Forget! The CVA Online Store!

On it, we have a wide variety of merchandise with the CVA logo, including shirts, sweatshirts, hats, mugs magnets, and other mementos. Some of the clothing items come in several colors, but you have to go to the individual product pages to see them.

Each product includes a donation to CVA

The CVA Online Store:
http://www.cafepress.com/CVAFresno

CVA Starwatch Information

Due to a rockslide that has partially blocked the road, as well as the cleanup efforts to remove it, starwatches which were scheduled to take place at Eastman Lake in March and April will not be possible. Instead, the starwatches will be at the old site, Buck Ridge, at Hensley Lake. The Eastman site for the May starwatch is iffy as well

All CVA Members-Astronomy Sale

Garrett Weimer is having an astronomy yard sale at his house-he will be selling several telescopes and accessories that have accumulated over the last few years. He will also have hotdogs and soda-come by to purchase something, or just to visit and chat

Date Saturday, May 21 9am to 4pm

Place-Garrett's house-4860 E. Normal Street, Fresno 559-251-5495

More Recent Hubble Images

Arp 273, a pair of galaxies commonly known as "The Rose." The one on top is UGC 1810, while the "stem" is UGC 1813. They are 300 million light years away in the constellation Andromeda. Image taken in December 2010.

Right-the galaxy NGC 3982 in the constellation Ursa Major. It is known for its large numbers of new stars being formed; it was also the site of Supernova 1998aq. It is 68 million light years away, and was imaged by HST in 2009

Dust pillars in the Carina Nebula imaged by Hubble in 2010. The nebula, in the constellation Carina, is 7,500 light years away.

Images from NASA/HST

Astronomical Trivia

Last issue's astronomical trivia question:

Vera Rubin of the Carnegie Institute popularized "Dark Matter" in the late 1970s, but who was the person who first proposed that much of the mass of the universe was actually unseen and undetected?

The honors go to Fritz Zwicky, an astrophysicist at CalTech. In the 1930s, Zwicky proposed that much of the universe was made up of unseen matter that could not be detected by present day instruments. Zwicky was undeniably brilliant, but had a reputation as a kooky eccentric. In one famous episode, he had gunshots fired out the dome viewing slit of the 200" Hale telescope with the notion that it would break up the air and improve the seeing. The seeing did not improve, and Zwicky was temporarily banned from using the telescope. Because of this and other incidents, Zwicky's ideas were not taken seriously until the 1970s, when Rubin's studies of the rotation rates of galaxies showed that some unknown mass was keeping them from flying apart. This would lead to the theory of dark matter.

This issue's trivia question-

The American Gemini program put astronauts into space in 1965 and 1966. Sandwiched between the early Mercury flights and the Apollo moon program, it is mostly forgotten today. Gemini, though, was not its original name. What was the name originally given to the program?

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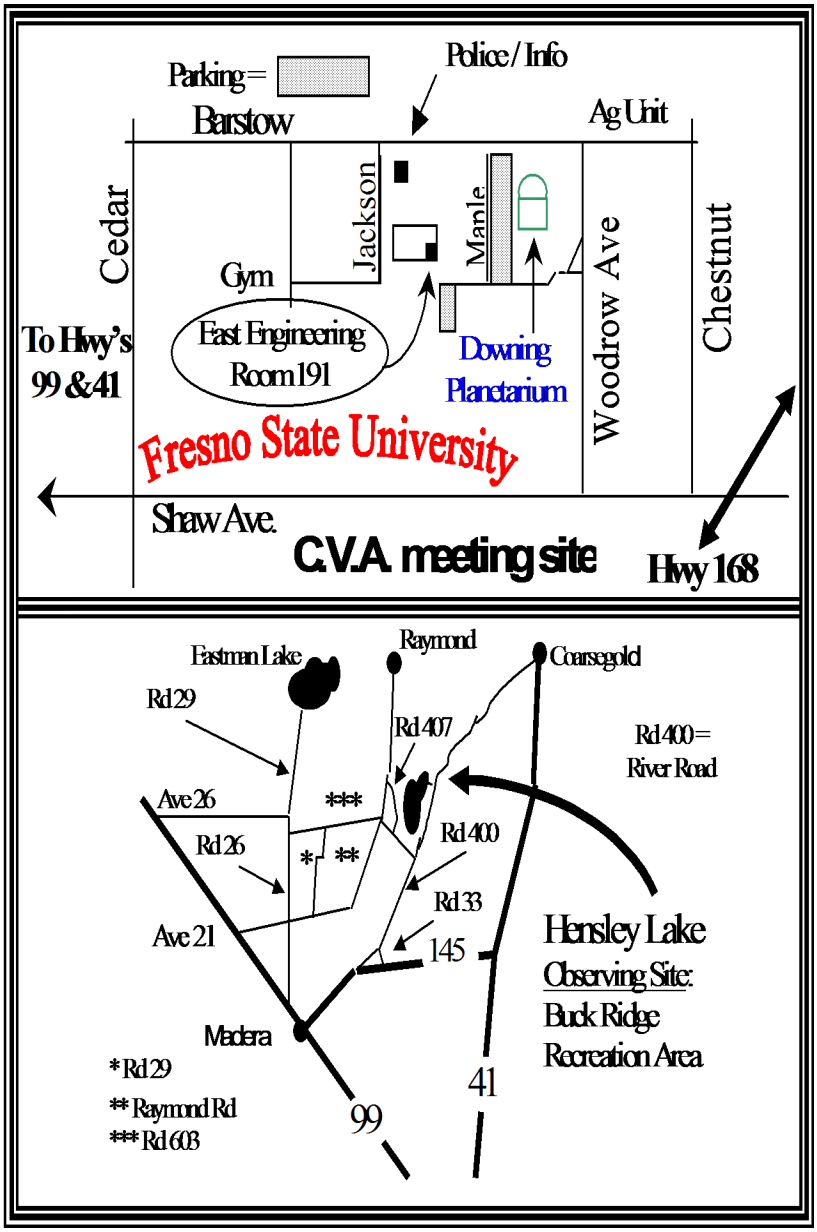
The next issue of *The Observer* will be posted on June 17, 2011

Please send all submission using Microsoft Word



Spring Happenings

The CVA site at Fresno State's annual Spring Vintage Days-April 2011. Many thanks to everyone who helped make it a success.
Image by Fred Lusk