

The Refractor

The Bulletin of the Eastbay Astronomical Society
 Founded in 1924 at Chabot Observatory, Oakland, California

Volume 80
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August 2004's talk:

A Perspective: Past and Present— The Eastbay Astronomical Society's Involvement with the Chabot Space & Science Center

Saturday, August 7, 2004, 7:30 pm

Speaker: Dr. Terry Galloway

Chabot Space & Science Center
 Physics Lab, 2nd Floor, Spees Building

What has the EAS had to do with Chabot Observatory/CSSC over the years, and what is it doing, now? Some of the past projects include: maintenance of the antique telescopes, Rachel and Leah; atmospheric extinction and compositional analysis studies; supporting NASA with Apollo orbital positional data obtained from Chabot's telescopes for the Apollo space program; keeping the facility open when the Oakland Unified School District wanted to close it because it was not earthquake-safe; the EAS Relocation Committee, which led to Chabot's new location; and, more recently, research projects involving exo-planets, accretion disks, exploding stars, and the study of solar radiation from Chabot's roof! Terry will give us a comprehensive view on how the EAS and Chabot have worked together throughout our history, from its very beginning to the present. He should know - he was there and involved for most of that time!

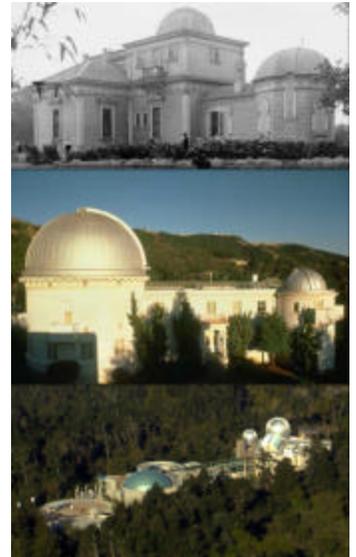
Terry Galloway holds a PhD in chemical engineering and has spent his life in nearly every area of energy production, including petroleum, coal gasification, extracting oil from shale, and magnetic fusion-produced hydrogen. Dr. Galloway was certain hydrogen could replace our oil-based economy, but the programs developing this concept at the UC Lawrence Livermore National Lab were cut in 1981 by then Pres. Reagan and converted into StarWars programs. And the current Bush-



Cheney administration wants to make our future economy run on oil and not renewable energy. This so angered his group, that Terry was picked to make their case to the White House' Energy Task Force.

Many staff and scientists bailed out from the StarWars programs at the Livermore lab and went on to form several private companies (e.g., Thermatrix and Synthetica) to further develop and market this technology to industry. Dr. Galloway is currently the President of the Intellergy Corporation in Berkeley, California, and the inventor of Advanced Steam Reforming for

waste conversion to hydrogen-rich syngas. He also authored the book, *Solar House: A Guide for the Solar Designer* (\$44 on Amazon - only three left in stock, more on the way!) He wrote this book from his extensive experience building the nearly energy-independent solar-powered house he's lived in for 27 years. A founding Director and Board Member of the new CSSC, the 90,000 sq ft, \$88 million facility that excites the public and our kids on science; you can find Dr. Galloway on most any given Sunday afternoon in Rachel's dome, greeting visitors, and imparting to them his enthusiasm for astronomy, science, and the Chabot Space and Science Center. ☆



From 1883 to 2004, Chabot's legacy lives on

DINNER WITH THE SPEAKER

5:30 pm
 Saturday, August 7
HUNAN YUAN
 4100 Redwood Rd., #11
 (next to Safeway)
 Oakland
 (510) 531-1415
 Contact Dave Rodrigues
 at 510/483-9191 or dav-
 erod@aol.com by Friday,
 August 6, to confirm

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You would think that this is the pier, and the tower in the distance was the ship—actually, the whole thing is the ship! The chairs and everything visible at ground level is the flight deck of the USS Hornet.

Blast from the past

By Don Saito

As amateur astronomers, we regularly travel the space-time continuum, looking at the events of eons past, but I recently took a short trip (both physically and temporally) into the not-too-distant past, and thought I'd share it with you.

On the evening of July 17, I had a chance to do some volunteer telescoping for the USS Hornet Museum's 9-day *Splashdown 2004* celebration. This was the aircraft carrier sent to pluck from the sea the first two sets of astronauts to walk on the moon (Apollo 11 and 12). The viewing was rotten, and we were forced to look at "deep-land" objects, albeit upside-down and backwards, to demonstrate the power of our telescopes. We talked astronomy with the people who came up from the event, and still had a good time doing that, but the subject of this short article is the tour I was able to take of the ship while waiting for the skies to darken. Wow. If you've

never done it, I highly recommend this tour (well, that is if you're not claustrophobic) - it's quite amazing.

Built in 1943 for WWII, the USS Hornet has had a long and distinguished history in its war and peacetime efforts. Walking through the interior compartments, looking at how the 4,000 officers and crew lived in that floating metallic ant-hill for months at a time; I could glean a mere inkling of what they must have gone through, eating, sleeping, working, playing, shooting, flying, living, and dying aboard that behemoth.

A few highlights of the tour: the anchor room, where each link in the chain weighs 120 lbs; the 5-inch 38 caliber gun, which I got to operate (see below), but didn't get to fire; and the stories and descriptions that our guide, Mike, told us - the stories really brought the place alive. There was the captured kamikazi pilot who hanged himself while in the brig; or how the Marines guarding the nuclear ordnance would grab *anyone* who crossed the red line by the scruff of the neck and toss them back across it. I was a little disappointed that our guide was unaware of any good ghostly encounters that he knew of, but I remember hearing, when I did volunteer telescoping for another event on the Hornet a few years ago, that one of the Hornet museum staff saw a man, dressed in period costume as a pilot, walk into the pilot briefing room, and wasn't there when they looked in the next moment later! (ooOOOOO-ooo ooo-eeee-oooo.) A real, "I see dead people," kind of moment. Cool.

Anyways, the ship museum is humongous, they host events (such as the AstroCon 2004 banquet) and visits by troops of Boy and Girl Scouts on a regular basis, they're open daily (see the website for their exact schedules at <http://www.uss-hornet.org/>), they've got a cool gift shop, and they're right here in the East Bay. Go see 'em, and if you do, tell 'em the EAS sent you! ☆



Note the angle that Alan Fisher's telescope is at; it's those wiley deep-land objects he's a huntin'

Editor's News 'n Views



Howdy Astro Fans!

By the time you get this newsletter, **AstroCon 2004** will probably be *just* over. I both helped and participated in some of the activities, and will let you know how it all went from my perspective, but I'd like to solicit some notes and/or

pictures from *you* as well. It's just nice to share the experience with those who couldn't attend.

The **USS Hornet Museum**, located in our own front yard (Alameda Point, former U.S. Naval Airstation), began its annual **Apollo 11 Splashdown Celebration** event, which runs from July 16 – 25, and several astronomy clubs around the Bay Area, including the EAS, helped out with telescope operator volunteers. **Carter Roberts**, **Paul Hoy**, **Alan Fisher**, **George Takahashi**, and myself were the folks from EAS, and we comprised 50% of the volunteers, there. We set our telescopes up on the flight deck of this incredibly *massive* seagoing airstrip, where fighter planes used to take-off and land during WWII, and several of us got an extremely cool personal tour from one of the Guides (thanks, Dave!) and saw some absolutely *amazing* things (see my story of this tour on Page 2). Unfortunately, the weather did not cooperate that evening (high clouds), and so we looked at stuff like: the Mormon Temple, a ship across the Bay, the Tribune clock tower in downtown Oakland – that sort of thing. We still got quite a few visitors from the event (where **Don Blair**, the radio voice of Apollo 11, gave a talk), and they were still intrigued and entertained by the magic of optics. The 24th is the final celebration banquet with special keynote speaker, **Alan Bean**, Apollo 12 Lunar Module Pilot.



Big, big news up at Chabot: the **Dragon Skies** exhibit was launched on July 10 to humongous crowds, eager to see the totally fascinating and extremely precise (not to mention *huge*) instruments the Chinese developed and constructed thousands of years ago to chart the heavens, keep time, measure earthquakes, and even tell the future! Here's official material from CSSC:

Featuring several Bronze Armillary Spheres, Stone Sundials, Oracle Bones, Water Clocks and various other scientific instruments from Beijing Observatory and Purple Mountain Observatory in China, this traveling exhibit takes the visitor through the secret world of Imperial Chinese Astronomy. Explore the tools Chinese astronomers used and learn about their early recordings of comets, meteor showers, eclipses, novas and sunspots.

The exhibit, which will run from July 10, 2004 - January 2, 2005, is filled with activities for family members of all ages.

Accompanying the exhibit, which was developed by Chabot Space & Science Center and will be traveling to 6 other US cities during its stay in the United States, is a new planetarium program: "Dragon Skies". This show illustrates the differences between Western and Chinese constellations, takes us back to the court of the Imperial Astronomer and emphasizes the influence of early Chinese observations on modern astronomy.

Center hours are Tuesday-Thursday 10:00 am-5:00PM, Friday 10:00am-10:00pm, Saturday 10:00 am-10:00pm, Sunday 11:00 am-5:00 pm. Telescope observing Friday & Saturday evening free of charge. (weather permitting)

For ticket prices, show times and directions go to www.chabotspace.org or call 510-336-7373.

LOOKING AHEAD...

We could *really* use some more volunteers for the EAS/CSSC Library Project. Poor ol' **Carter Roberts**, **Debbie Dyke**, **Paul Hoy**, and **Frank Creese** can't do it all by themselves! It's only for three hours **on most Saturdays**, and the work is not hard, there just *lots and lots of it*. Pitch in - give a hand - and as Hobbit Samwise Gamgee would say, "share the load." Call Paul at (510) 531-6305, or Carter at (510) 524-2146 to sign up or get more details.

The joint Tri-Valley/EAS star party to that ultimate dark-sky site, **Barcroft Station**, is coming up, Sunday, August 8 - Monday the 16th. Also, the Tri-Valley club is holding a star party at Glacier Point in Yosemite on Saturday, August 7. The Barcroft Station star party is \$55 per day, per person, and reservations must be made in advance. See last month's (July, 2004) issue, or call **Dave Rodrigues** at (510) 483-9191 for more details.

Lastly: if you've got fast Internet access, but are still getting the snailmail (paper) newsletter, please consider switching to the digital download option, instead. It saves the club \$\$\$, it's better for the environment, you get to see it sooner, it reduces the wear and tear on the Editor (that'd be ME), and you get to see it in glorious color. Such a deal! Just dash an email off to our Membership Registrar, **Bruce Skelly** (bjskelly@yahoo.com) with the message, "switch to digital," and he'll take it from there.

Oh, ooo - one *last* thing: I believe it was at the June meeting I mentioned that Members' Only View Night wasn't going to recommence until September - *wrong*! Our next MOVN will be on Sunday, August 22nd. We decided to include a bit of Moon watching this time, as well.

And that *really* wraps it for this month! The nights continue to get longer as we continue the slippery temporal slide down to Winter Solstice, but until then, enjoy the warm days, and avoid that pesky Bay Area summertime fog pattern. See you - IN THE FUTURE! ★

Strait to the Stars celebration

Saturday, August 14

Article and images by Bart Paugh

EAS members are invited to participate in the second annual *Strait to the Stars* star party and celebration at the San Pablo Bay National Wildlife Refuge on Mare Island (near Vallejo) Saturday night, August 14, 2004.

The event is part of the Carquinez area's *Celebrate the Strait* festivities and is hosted by Wildlife Refuge Director Christie Smith and coordinated by me (Bart Paugh), EAS member and



Early set-up at the Mare Island site for the Park-hosted event, Strait to the Stars

Cookies and treats are provided starting around 8:30 pm and a brief presentation on the Refuge's mission and role will be given along with an overview of celestial objects that can be observed that night. Last year's activities included a *Star Gazing Word Search*, and *Skywatch Observation Log*. Also, an Environmental Education Specialist spoke on *How the Moon Affects the Tides*, and *How Tides Affect San Pablo Bay Organisms*.

Ken Swagerty and his granddaughter, Lacey Brooke, Bill Singman, myself, and other EAS and Chabot community members brought telescopes last year and treated the visiting public to spectacular views of Mars and many other astronomical targets. We were invited to stay as long as we liked and were up well past 2 a.m., locking

[4]

Chabot volunteer. All are invited to come out and bring their telescopes (and families) for a wonderful observing opportunity from the grounds of the beautiful and unique National Wildlife Refuge on Mare Island.



Ken's granddaughter, Lacey, is actually the PIC (Pilot in Command) of this telescope, and can find and speak knowledgeably about many deep-sky objects.

the gate behind us.

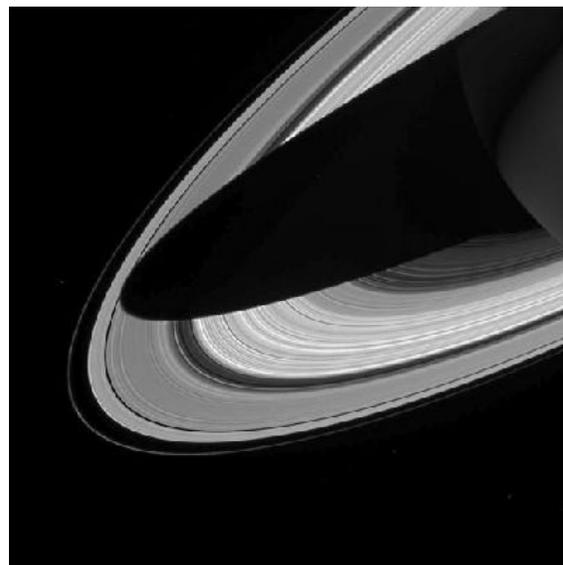
"Telescope set-up arrangements are convenient and we have a good horizon," Swagerty said. "You can drive right up to where you're going to set up." Though it can be breezy and there is always the risk of fog, last year's observing was very good, and August 14 (this year) will be a moonless night.

For more information or directions, contact Christy Smith at the San Pablo Bay Wildlife Refuge at 707 562-3000 or Bart Paugh at 510 531-2951, or email to BartPaugh@msn.com. ★

Cassini Probe Update

This dramatic view of Saturn's rings draped by the shadow of Saturn, shows brightness variations that correspond to differences in the concentration of the ring particles as they orbit the planet.

The planet's western limb is visible in the upper-right corner. Three of Saturn's moons can be seen here: Bright Enceladus (499 kilometers, or 310 miles across) is visible near lower right; Epimetheus (116 kilometers, or 72 miles



across) appears at center left; and interior to the F ring, near the top of the image, is Prometheus (102 kilometers, or 63 miles across). The F ring, the outermost ring shown here, displays several knot-like features near the left side of the image.

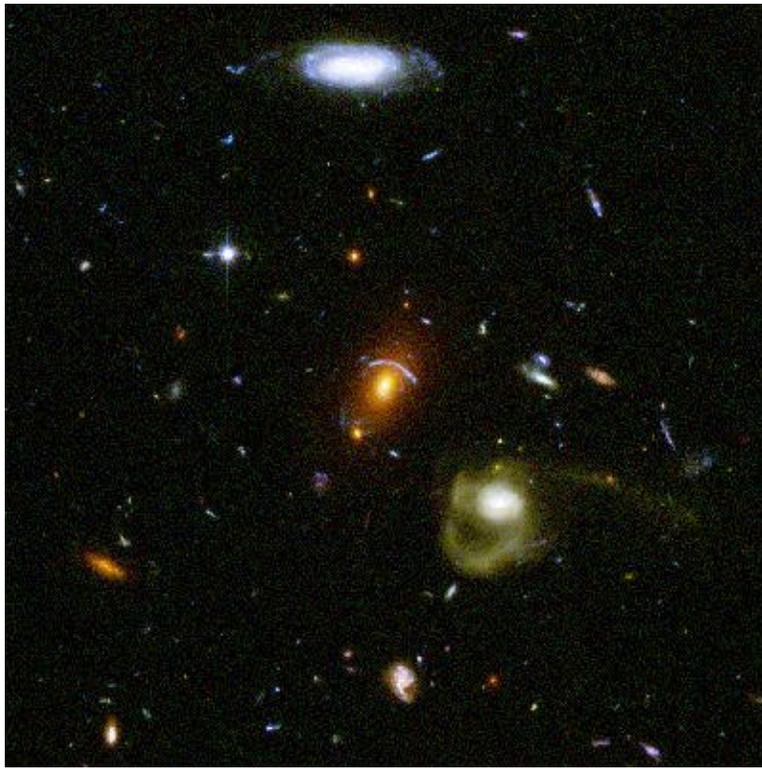
The image was taken in visible light by the Cassini spacecraft wide angle camera on July 3, 2004, from a distance of 1.5 million kilometers (930,000 miles) from Saturn, at a Sun-Saturn-spacecraft, or phase, angle of about 108 degrees. This is the first processed wide angle camera image to be released since Cassini's encounter with Jupiter in 2000. The image scale is 87 kilometers (54 miles) per pixel.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Office of Space Science, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging team is based at the Space Science Institute, Boulder, Colo.

For more information, about the Cassini-Huygens mission visit, <http://saturn.jpl.nasa.gov> and the Cassini imaging team home page, <http://ciclops.org>.

Credit: NASA/JPL/Space Science Institute

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Spare Shots

▶ TV station KRON-TV Channel 4 comes to Chabot to film news anchor Brian Hackney doing a spot on the 35th year anniversary of Apollo 11 (Photo by Don Saito)



◀ Apollo 12 Command Module Pilot Dick Gordon at the USS Hornet Slashdown 2004 celebration. (Photo by Carter Roberts)



Save the Hubble!

The Hubble Space Telescope revolutionized the way Humankind perceived the universe, extending our reach and understanding of the cosmos to unprecedented levels. Now, because the space shuttles are grounded due to the *Columbia* disaster, and because Pres. Bush has directed NASA to focus on manned Moon and Mars missions, NASA Administrator Sean O'Keefe made the decision to abandon any further Hubble rescue or repair missions. This means the space telescope will become crippled and useless by around 2007. After overwhelming public and scientific community protest, Mr. O'Keefe is looking at trying to use robots to do the needed repairs, but this may or may not be feasible.

You can help keep the Hubble Space Telescope alive by going online to <http://www.savethehubble.org/petition.jsp> and add your name to the petition. If you don't have web access, ask a friend who does to do it for you. There is also now a link to the web page mentioned above on the EAS website at <http://www.eastbayastro.org/>. ★

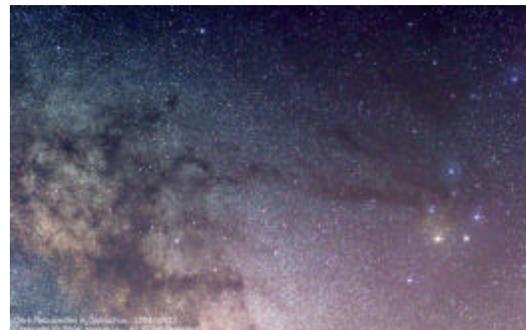
Above photograph: Like a photographer clicking random snapshots of a crowd of people, NASA's Hubble Space Telescope has taken a view of an eclectic mix of galaxies. In taking this picture, Hubble's Advanced Camera for Surveys was not looking at any particular target. The camera was taking a picture of a typical patch of sky, while Hubble's infrared camera was viewing a target in an adjacent galaxy-rich region. The most peculiar-looking galaxy in the image — the dramatic blue arc in the center — is actually an optical illusion. The blue arc is an image of a distant galaxy that has been smeared into the odd shape by a phenomenon called gravitational lensing. From the Space Telescope Science Institute website, <http://www.stsci.edu/resources/>



Snake Nebula & Eryonids in Ophiuchus © 2004 JUN 23 Copyright (c) 2004 Joseph Liu - All Rights Reserved



▲ Astrophotographer Joseph Liu in Nellie at Chabot Photo by Don Saito (Two of Joe's pictures are shown to the left)



▶ Volunteer telescope operator on the flight deck of the USS Hornet Photo by Carter Roberts

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Eastbay Astronomical Society

At Chabot Space & Science Center
10000 Skyline Boulevard • Oakland, CA 94619

August 2004
RETURN SERVICE REQUESTED

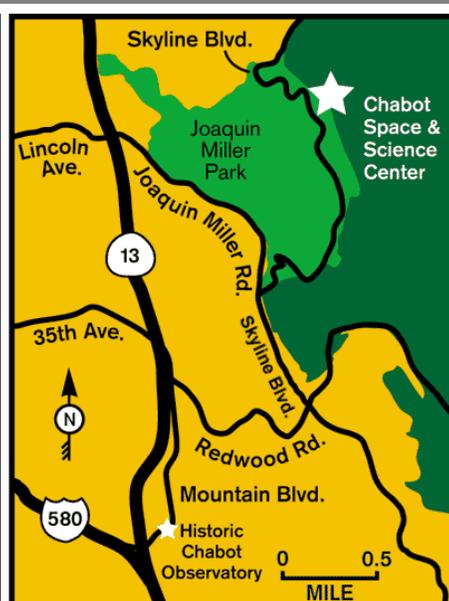
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Events Coord: Dave Rodrigues (510) 483-9191

Articles and photos for *The Refractor* are encouraged. Deadline for the September 2004 issue is August 15, 2004. Items may be submitted by mail to the Editor at 3514 Randolph Avenue, Oakland, CA 94602-1228. Internet email address: donsaito@comcast.net Hm: (510) 482-2913.



FUTURE CONJUNCTIONS

- Aug 7 EAS General Meeting at Chabot, 7:30pm Physics Lab
- 8-16 Hi-Altitude Star Party at Barcroft Station
- 19 EAS Board Meeting, Chabot, Soda Board Rm, 7:30pm
- 22 EAS Members Only View Night at Chabot
- Sep 4 EAS General Meeting at Chabot, 7:30pm Physics Lab
- 16 EAS Board Meeting, Chabot, Soda Board Rm, 7:30pm
- 19 EAS Members Only View Night at Chabot

Join the Eastbay Astronomical Society

- Regular, \$24/year
- Family, \$36/year
- Contributing, \$40/year
- Student, \$15/year (digital newsletter, only)
- Sustaining, \$60/year or more

Contact: Don Stone, EAS Membership Registrar, Telephone: (707) 938-1667 Email: ddcstone@earthlink.net
Mail: 19047 Robinson Road, Sonoma, CA 95476-5517

☞ New memberships sent in from August—October will receive free newsletter(s) (Sept & Oct) before the start of the next membership year in November, when the regular 12-month subscription actually starts.