



# The Refractor

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

Volume 89  
 Number 6  
 March 2013

This month's event:

## The Eastbay Astronomical Society Annual Awards Dinner

Saturday, March 16, 6:00 pm  
 Chabot Space & Science Center  
 Galileo Room, 2nd Floor, Spees Building

The doors will open at 5:45 pm, with Dinner at 6:30 pm.  
 Awards presentation, door prizes and lecture about 8:00 p.m.

### When Will We Find E.T. and What Happens If We Do?

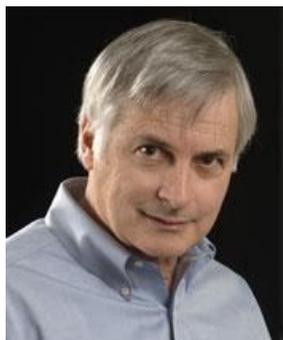
Presented by **Dr. Seth Shostak**  
 Senior Astronomer at SETI  
 (Search for Extra-Terrestrial Intelligence)

The scientific hunt for extraterrestrial intelligence is now into its fifth decade, and we still haven't uncovered a confirmed "peep" from any cosmic company. Could this mean that finding aliens, even if they exist, is a project for the ages – one that might take centuries or longer?

New technologies for use in the Search for Extraterrestrial Intelligence (SETI) suggest that, despite the continued dearth of signals, there is good reason to expect that success might be just around the corner – that we might find evidence of sophisticated civilizations within a few decades.

Why this might be more than wishful thinking and what contact would mean are the subjects of this talk on the continuing efforts to establish our place in the universe of thinking beings.

Seth claims to have developed an interest in extraterrestrial life at the tender age of ten, when he first picked up a book about the solar system. This innocent beginning eventually led to a degree in radio astronomy, and now, as Senior Astronomer, Seth is an enthusiastic participant in



the Institute's SETI observing programs. He also heads up the International Academy of Astronautics' SETI Permanent Committee.

In addition, Seth is keen on outreach activities: interesting the public – and especially young people – in science in general, and astrobiology in particular. He's co-authored a college textbook on astrobiology, and has written three trade books on SETI. In addition, he's published more than 400 popular articles on science -- including regular contributions to both the Huffington Post and Discover Magazine blogs -- gives many dozens of talks annually, and is the host of the SETI Institute's weekly science radio show, *Big Picture Science* at <http://radio.seti.org/> (You can click this link if you're viewing it online, or type the URL into the address field of your web browser. A lively show—recommended!) ★

**OF COURSE, THERE IS NO DINNER WITH THE SPEAKER THIS MONTH BECAUSE WE'LL ALREADY BE HAVING DINNER WITH THE SPEAKER AT THE EVENT**

<b>Inside This Issue:</b>	
<b>Job Opportunity</b>	<b>2</b>
<b>Report: Feb MOVN</b>	<b>2</b>
<b>News 'n Views</b>	<b>3</b>
<b>Book Review</b>	<b>4</b>
<b>Aerosols</b>	<b>4</b>
<b>Directions &amp; Schedule</b>	<b>5</b>
<b>(insert) Awards Dinner</b>	

# Night Sky Network



## Career Opportunity

**Night Sky Network Communication Specialist** The NASA Night Sky Network is administered for NASA by the Astronomical Society of the Pacific. This position is part of the administrative and creative team that supports more than 400 member amateur astronomy clubs.

### Required skills:

- \* Passion for and knowledge of astronomy
  - \* Solid understanding of the workings and culture of amateur astronomy clubs
  - \* Proven written and oral communication skills
  - \* Strong organizational skills
  - \* Excellent interpersonal skills
  - \* Ability to work flexible hours with occasional weekends and evenings
  - \* Ability to work independently and collaboratively
  - \* Some travel may be required for conferences
- Desired Skills:**
- \* 3 years experience in astronomy outreach and/or membership in amateur astronomy club
  - \* Bachelors Degree
  - \* Comfort in using web forms

### Typical tasks for internal communications include:

- \* Edit monthly newsletter to club coordinators
- \* Respond to requests and questions from club members
- \* Update internal article on NSN website every other week
- \* Update email bounces
- \* Coordinate and host bi-monthly telecons with NASA scientists
- \* Administer quarterly prizes

- \* Send out new toolkits as they are earned by clubs on a quarterly basis
  - \* Coordinate distribution of annual pins
  - \* Support volunteer mentors
  - \* Review activity logs to send words of encouragement to clubs
- Typical tasks for external communications include:
- \* Coordinate NSN/ASP booth at national and regional gatherings of amateur astronomers (like NEAF, PATS, AICon)
  - \* Author or co-author two outreach articles each year for national publications.
  - \* Submit regular NSN updates for the ASP monthly newsletter.
  - \* Maintain regular flow of Facebook and Twitter content
  - \* Respond to periodic requests and questions from the public
  - \* Evaluate and Accept new clubs into the Network
  - \* Post new external article for the NSN website every other week
  - \* Update 'Featured Activity' on NSN website
- Additional duties may include:
- \* Solicitation of Education and Public Outreach (EPO) materials from various NASA missions for distribution to clubs
  - \* Advocate for use of NSN calendar/event feed into astronomy mobile apps
  - \* Support of lead educator on development of new outreach materials
- This is a full time exempt position in our San Francisco office.

Salary is commensurate with experience. Excellent benefits.

The Astronomical Society of the Pacific is an Equal Opportunity Employer and welcomes applications from individuals who will contribute to its diversity.

### Application Instructions:

Please submit your cover letter and resume to [sgurton {at} astro.society.org](mailto:sgurton@astro.society.org) or, mail to:

Suzanne Gurton  
Education Manager  
Astronomical Society of the Pacific  
390 Ashton Avenue  
San Francisco, CA 94112

Applications accepted until position is filled with target start date of March 15.

No phone calls, please. ★

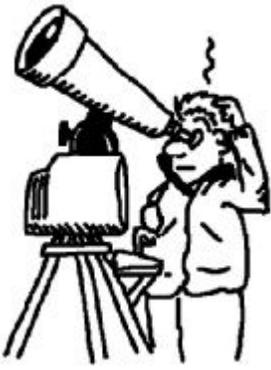
## MOVN REPORT

For our February *Member Only View Night* at the 36" computerized reflector (Nellie), we looked at the Orion Nebula, Clown Face Nebula, Jupiter, Moon, M35, M36, M37, M46 and M81.

Through Rachel, we got a view of the Moon that made it look like we were about to land on it. At others' requests, we used the 31mm, 25mm, and 13mm eyepieces to up the magnifications on Jupiter from 275x to 341x to 657x. Bob Minor brought his bino-viewers and I swear Jupiter looked closer

than the three Jovian moons that were in the field of view! At Bob's request, we also got a rare view of the brightest star Sirius A's companion, Sirius B; it was a bit of a push for some of the attendees to see it, but once they did, they were quite excited.

This MOVN was a lot better attended than what I've seen in the past. One fellow brought up his recently constructed TMW scope which he bought a killer equatorial mount for; I helped him figure out how to set it up and align it for tracking. How nice! ★



## Editor's News 'n Views

Howdy Astro Fans! It's an important month, this month. Not only do we have our EAS Annual Awards Dinner (by the way, if you haven't already, **WE NEED YOU TO SIGN UP FOR THIS EVENT ASAP**), we've also got a

possible comet to view; Comet PanSTARRS (don't ask me why the name looks like that) might become visible just after sunset low in the west around March 7th and for several days after that. For more info on it, click this link: <http://earthsky.org/space/comet-panstarrs-possibly-visible-to-eye-in-march-2013> (or, if you get this newsletter via snailmail, I'm afraid you'll have to just type the URL in manually). Keep a look out for it!

Last month, we (Earthlings) also had a surprise attack from an asteroid exploding with the force of 20 Nagasaki atom bombs over Russia, a close pass by asteroid 2012 DA14, and a nice bolide sighting over the Bay Area. And you thought astronomy was too boring for the public!

In case you hadn't yet heard, our favorite NASA NEO (near earth object) observation collaborator, **Gerald McKeegan**, brings to our attention **comet Siding Springs C/2013 A1**, which will pass very close to Mars on October 19, 2014. Currently, the estimated close approach distance is about 63,000 miles. But that is based on a limited set of observations, and the error window completely engulfs Mars, so there is a significant possibility of impact. Even if the nucleus does not directly impact Mars, the comet's coma could easily be large enough to interact with Mars' atmosphere. This is a once-in-a-many-lifetimes event, and one that NASA is preparing for in the hopes of getting data from their two Mars rovers and two orbiting satellites. Also hopefully included in this watch-fest will be a *third* satellite: NASA's new MAVEN spacecraft, which is due to reach Mars in September of 2014; they're scrambling to try and get it ready to participate, as well. One of the cool things that brings this whole event closer to our club—

NASA's HiRISE (High Resolution Imaging Science Experiment) camera, which resides aboard the already-in-orbit MRO (Mars Reconnaissance Orbiter), was

built by a team headed by **Dennis Gallagher**—a former student of our Telescope Maker's Workshop! (Thanks to **Terry Galloway** for that interesting tidbit of EAS history.)

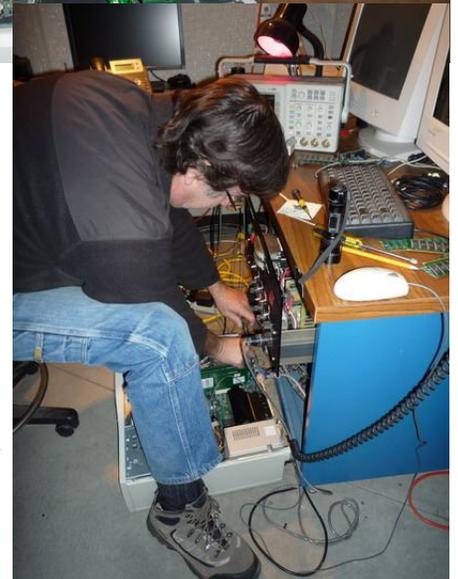


◀ *Rich Ozer, Gerald McKeegan, and Kevin Medlock trying to will Nellie back to life!*

▼ *Alan Roche checking to make sure cable connections are secure.*

and several of EAS' brightest (**Gerald McKeegan, Rich Ozer, Alan Roche**) in conjunction with the systems manufacturer (DFM) volunteered their

time, energy and expertise (Alan even donated a *new computer*) over the course of several weeks to find the various problems plaguing the scope, including a partially disabled computer, and an eroded data contact at the back of the telescope body, itself. So, after nearly 1.5 months being down, Nellie is back up and running again, and she's got a fully-tested backup computer to step in, should the need arise. Fantastic work, guys! ☆



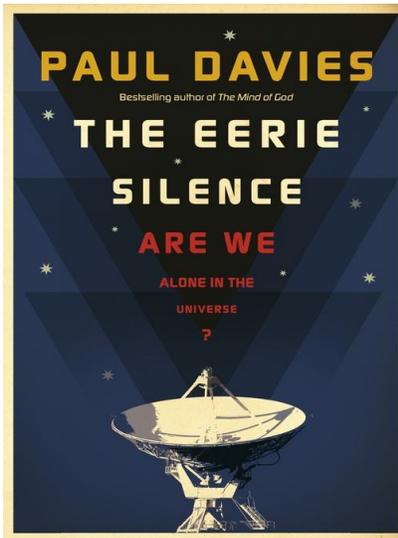
## BOOK REVIEW:

*The Eerie Silence*

Author: Paul Davies

Review by: Gene Weber

To date, Humans have found no evidence of life outside our solar system, and we have not been contacted by extra-terrestrials. If life, more importantly intelligent life, is so prevalent in our known Universe, then where is everybody? Paul Davies asks this very question in his book. He briefly outlines the history of evolution of life on Earth, followed by civilization's development and the advent of technol-



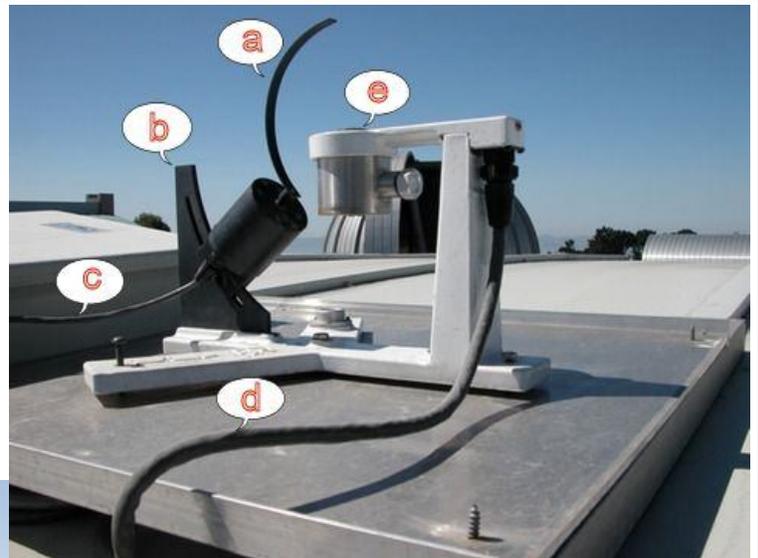
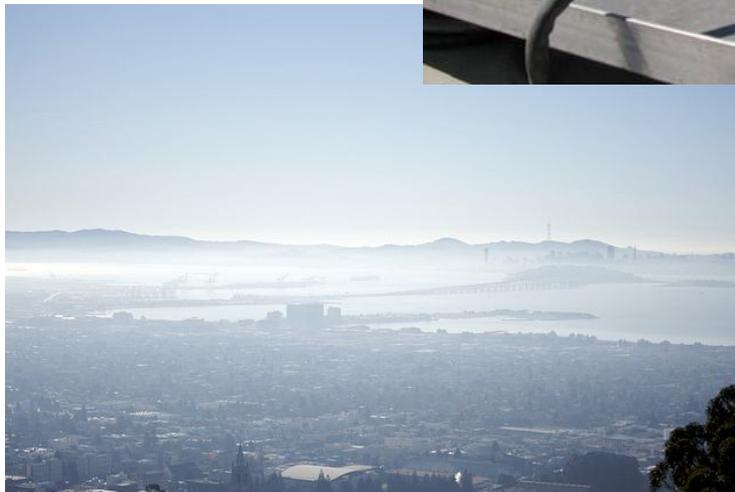
ogy allowing humans to send and receive information concerning forms of life existing elsewhere. He discusses how life might evolve on other planets, become intelligent, civilized, and technologically advanced. He discusses the enormous amount of time required for intelligent civilizations to evolve, interact with others, and eventually die, as well as the immense distances in space that inhibit both communication and planetary travel. He ponders the pros and cons of a civilization being "artificial" versus "biological" in nature. He also speaks to the question of what people of Earth should do if a message is received or if "first contact" occurs. Might the first message be recognized by SETI? Who should acknowledge and speak for the people of Earth? What should we say? What should we do? What might happen to our societal structure or to humanity as a whole? Some excellent questions and possible answers coupled with relevant information in this entertaining and thought-provoking book regarding intelligent life in our Universe.

## MEASURING ANTHROPOGENIC ATMOSPHERIC AEROSOLS

A cooperative atmospheric aerosol research program between Chabot and U.S. Los Alamos National Laboratory (LANL) was launched in 2002 and continues today, where Chabot provides the roof-top location and LANL provides the Multi-Filter Rotating Shadowband Radiometer (MFRSR). This is a fully automated scientific instrument that looks at the Sun directly and at the atmosphere with the Sun blocked out by the moving shadowband in 7 different narrowband wavelengths in the visible. It tracks and follows the Sun throughout morning sunrise to evening sunset. The automated software gathers and records the measurements made

about every 5 minutes throughout the day. The data are collected and analyzed by the powerful computer program called "Langley" from which is produced the direct radiation flux and the aerosol side scatter at the 7 wavelengths as a function of time and the air mass or atmospheric thickness through which the Sun light travels to reach the instrument. The change of aerosol scatter as a function

of air mass is called the aerosol extinction coefficient. This measurement throughout the day reveals the atmosphere's Rayleigh scattering, aerosol scattering from dust, photochemical pollution, water droplets, molecular absorption from water and pollutants, etc. These data are correlated with atmospheric pollutant measurements made by the Bay Area Air Pollution Control district on particulate matter, ozone, hydrocarbons, nitric oxides, etc. to help better understand the properties of our



Above:

- a: rotating arm that cast a shadow to block and unblock the sun
- b: latitude adjustment circle.
- c: computer control box
- d: data cable
- e: photometric, 7 narrow band filter detector head

atmosphere during the daytime. At night a similar measurement is made of atmospheric extinction by photometrically measuring the change in the brightness of star as a function of air mass to calculate the aerosol extinction. Both are used in global warming models that quantify the heat balance around the Earth both day and night.

The scientists and engineers involved in this research project are Dr. William Porch, Dr. Terry Galloway, and Alan Roche.

# Eastbay Astronomical Society



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

**March 2013**  
RETURN SERVICE REQUESTED

## Eastbay Astronomical Society

President: Barry Leska

Treas: Richard Ozer (510) 406-1914

Secretary: Don Saito (510) 301-2570

b.leska@comcast.net

rozer@pacbell.net

donsaito@yahoo.com

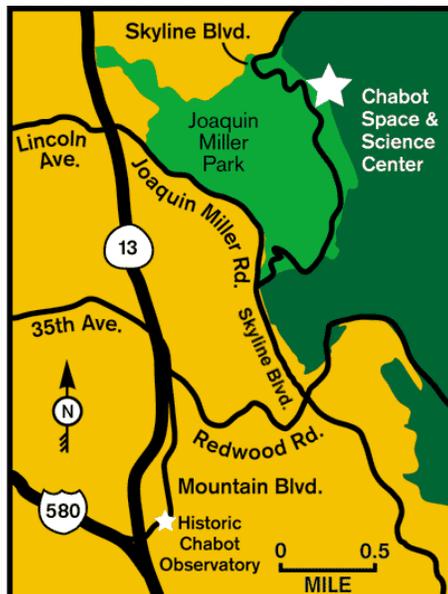
Vice President: Linda Lazzaretti - (510) 633-2488

Membership Reg: Rod Simmons - wileycoyote-genius@earthlink.net

Events Coord: David Prosper (510) 457-8346 - david\_prosper@gmail.com

Articles and photos for *The Refractor* are encouraged. Deadline for the April 2013 issue is April, 1 2013. Items may be submitted by mail to:

Editor - 2676 Poplarwood Way, San Jose, CA 95132-1083. Internet email address: donsaito@yahoo.com Hm: (510) 301-2570.



### FUTURE CONJUNCTIONS

- Mar 14 Board Meeting, Chabot, Soda Board Rm, 7:30pm
- 16 EAS Annual Awards Dinner, Galileo Rm, 6pm
- 17 EAS MOVN, Wightman Plaza 7:30pm—10pm\*
- Apr 11 Board Meeting, Chabot, Soda Board Rm, 7:30pm
- 14 EAS MOVN, Wightman Plaza 7:30pm—10pm\*
- 20 EAS General Meeting, Hauben Rm, 7:30pm - 10pm

\*Always call Gerald McKeegan (925) 926-0853 to confirm

### Join the Eastbay Astronomical Society

- Regular, \$24/year  Family, \$36/year
- Contributing, \$40/year  Student, \$15/year
- Sustaining, \$60/year or more

Contact: Richard Ozer, EAS Treasurer  
Telephone: (510) 532-5477 Email: rozer@pacbell.net  
Mail: PO Box 18635, Oakland, CA 94619-0635  
Sign up online at <http://www.eastbayastro.org/>

# ***Eastbay Astronomical Society***

*Ninetieth Anniversary Dinner*

***Saturday, March 16, 2013***

***Galileo Room at Chabot Space & Science Center***

*10000 Skyline Boulevard, Oakland*



The doors will open at 5:45 pm, with Dinner at 6:30 pm. Awards presentation, door prizes and lecture about 8:00 p.m.

## **When Will We Find ET and What Happens If We Do?**

*Presented by Dr. Seth Shostak*

*Senior Astronomer at SETI (Search for Extra-Terrestrial Intelligence)*

The scientific hunt for extraterrestrial intelligence is now into its fifth decade, and we still haven't uncovered a confirmed "peep" from any cosmic company. Could this mean that finding aliens, even if they exist, is a project for the ages – one that might take centuries or longer?

New technologies for use in the Search for Extraterrestrial Intelligence (SETI) suggest that, despite the continued dearth of signals, there is good reason to expect that success might be just around the corner – that we might find evidence of sophisticated civilizations within a few decades.

Why this might be more than wishful thinking and what contact would mean are the subjects of this talk on the continuing efforts to establish our place in the universe of thinking beings.

For his years of commitment and devotion to the promotion of amateur astronomy through his volunteer work as an Instructor in the Eastbay Astronomical Society's Telescope Makers' Workshop, his participation in EAS star parties and outreach events for the Chabot Space and Science Center, and for serving as the Eastbay Astronomical Society President for the last two years.

This year's **Helen Pillans Award** goes to

**Barry Leska**



The dinner will be catered by **Harry's Hofbrau** featuring Roast Beef, Turkey, Vegetables, Salad, Rolls, and Coffee. This dinner always gets rave reviews!

Cost per person will be \$35.00. Mail your checks, payable to the EAS, as soon as possible with the form below, or bring it with you to the next meeting, or give it to Rich Ozer at the Telescope Makers' Workshop some Friday evening, or (easiest) register online by clicking the orange PayPal *Donate* button on the EAS home web page at [www.eastbayastro.org/](http://www.eastbayastro.org/). Get your reservation in soon to guarantee a seat. We must give the caterer a final count by March 1st .

Questions?  
Contact EAS Treasurer Richard Ozer at  
**(510) 406-1914**  
or email him at  
**rozer@pacbell.net**

**EAS Banquet — March 16, 2013  
Reservation Form**

Your name: \_\_\_\_\_

Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Number of guests: \_\_\_\_\_ x \$35.00 = \$ \_\_\_\_\_

Names of additional guests \_\_\_\_\_

Please make your check payable to the EAS and send it with this form to:

*EAS Treasurer  
Post Office Box 18635  
Oakland, CA 94619-0635*