

The Observer

SAN BERNARDINO VALLEY AMATEUR ASTRONOMERS

Member of The Astronomical League

<http://sbvaa.org/>



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Since 1958

April, 2012

Meeting:

April 14, 2012

Location:

San Bernardino County
Museum, 7:00 p.m.
Redlands, CA. California
St. exit, I-10 Fwy.

Pre-meeting Dinner, 5:00
p.m.,

The Sizzler
1800 So. Waterman
Ave.
San Bernardino, CA

After the meeting telescopes
will be set up for viewing
and members will be
available to answer
questions. Bring your
telescope to observe with us.

*No telescope is too humble,
and beginners are always
made welcome!*

After viewing the group will
head for Coco's in Redlands,
Tennessee exit, I-10 Fwy.

Program

The Chirality of Solar Structures and its Significance

Sara F. Martin

Helio Research, La Crescenta, CA

During the last decade of the 20th century and into the early years of the 21st century, a series of discoveries took place on the chirality (handedness) of a majority of features observable in the atmosphere of the Sun. These features will be defined and illustrated. They include filament channels, filaments (prominences if observed above the limb), coronal loops systems and solar flares as well as lesser known solar features. In most cases, the signatures of chirality are sufficiently large in scale to be observed in small, solar telescope of high optical quality if equipped with a small filter for detecting the Sun in the light of the hydrogen alpha line ($H\alpha$). Therefore the ability to recognize chiral properties of solar features is a new dimension of capability open to amateur as well as professional solar astronomers. During the years of discovery, recognizing the chirality of individual solar features was a novelty whose significance remained obscure although it was generally recognized that chirality should have significance in the understanding the magnetic fields of solar structures. This presentation will show that the chiralities of solar features form the basis for the concept of "chiral systems." A new hypothesis is that developing chiral systems are the main drivers of eruptive solar events including coronal mass ejections, erupting filaments and solar flares.

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Calendar of Upcoming Events

April 21, star party, Afton Canyon

or

April 21, star party/public outreach, Wildlands
Conservancy, Oak Glen

April 28, Public outreach at the Museum (see
note below)

May 1, Outreach at Barton School, San Bernardino

May 12, club meeting at the Museum

May 19, star party, Johnson Valley

Brief Bio of our Speaker, Sara F. Martin

Sara Martin is a co-founder of Helio Research, a nonprofit corporation registered in the State of California since 1995. She began her life's work as a summer student at the McMath-Hulbert Observatory near Pontiac, Michigan. Her career in solar astronomy has included studies of active regions, sunspots, flares, filaments, magnetic fields, and observational studies of small-scale components of the solar cycle. In her various positions at solar observatories, she has worked with solar telescopes at the former Lockheed Solar Observatory, San Fernando Observatory, Big Bear Solar Observatory and the most recently, the Martin Telescope at Helio Research. In 2010 she coordinated a 6-month observing program primarily on filaments and their environment at the Dutch Open Telescope on La Palma in the Canary Islands. Notable in her published work in the scientific literature has been the conception of a multi-slit spectrograph, finding the invariable relationship of filaments and flares to polarity reversal boundaries, confirming and quantifying the relationship of new active region magnetic fields to the eruption of nearby filaments, discovery of the

ubiquity of cancelling magnetic fields on the quiet and active Sun, establishing the relationship of filaments to cancelling magnetic fields, working with colleagues in finding and defining the chiral properties of filament channels, filaments and coronal loops systems, and discovering the continuous presence of counterstreaming in stable filaments and the roll effect in erupting filaments. She is currently working with colleagues who collectively have developed a new concept of multiple stages in the long-term build-up to eruptive solar events.

School Outreach!

On Tuesday, May 1, we'll be sharing views of the moon, Venus and Saturn with lots of children and parents at Barton School in San Bernardino. The address is 2214 Pumalo St. We'll set up around sunset, 7:30, and then view from 8:00 to 9:00 pm.

Sharing views of Saturn and the moon really amaze the kids—lots of "oohs and ahhs" to be heard, so be sure to come on down with your scope and give them a real visual treat!

Club Meeting Dates for 2012

~~February 11~~
~~March 10~~
April 14
May 12
June 9
July 14
August 11 (ann. BBQ)
September 8
October 20
November 17
December (tbd) ann. holiday dinner

Public Outreaches

By Chris Clarke

Astronomy in the Wildlands.

Saturday, April 21, we will be co-hosting a public outreach with the Wildlands Conservancy in Oak Glen. This is one of the darkest areas in the San Bernardino valley. It's right next to Los Rios Rancho. Watch for detailed directions from Tom.

Astronomy Day at Night

On Saturday, April 28, the club will set up telescopes at the County Museum to celebrate Astronomy Day. We'll observe the first-quarter moon, Saturn and a crescent Venus. Sunset is at 7:30 and viewing will go from 8:00 to 9:30 pm. We'll be setting up at the south end of the parking lot on the asphalt. Come on down and share the wonders of the universe with the public—it's lots of fun for everyone!

Looking for Someone to do Astronomy with Kids

By Chris Clarke

Matthew Douglas, Recreation Coordinator for the City of San Bernardino, wants to know if anyone in our club would be interested in volunteering with their new mobile astronomy program -- someone who would like to work with kids and share astronomy with them at various places in the area.

The individual needs only basic astronomical knowledge and the ability to operate a telescope. They have acquired a new telescope and equipment to do this, so you wouldn't be using your own.

The frequency of doing it would be about twice a month. If you are interested, please contact Matthew at (909) 384-5233. If you have the time, work well with children and have a desire to share astronomy, this is a nice opportunity.

RTMC

May 23rd to the 28th will be the dates for the 44th annual RTMC. As before, it will be held at Camp Oakes, five miles southeast of Big Bear City on State Route 38 at Lake Williams Road between mileposts 44 and 45. This location is about 50 miles northeast of Riverside in the San Bernardino mountains.

Longitude 116° 45' 15" West

Latitude 34° 13' 50" North

Altitude 7250 feet (2210 meters)





*Though my soul may set in darkness,
it shall rise in perfect light;
I have loved the stars too truly,
to be fearful of the night.*

Tom Johnson, 1923–2012

By Dennis di Cicco, *Sky & Telescope*

Thomas J. Johnson, the creator of the modern Schmidt-Cassegrain telescope and the founder of Celestron, died early this morning (March 13, 2012), according to Celestron president and CEO Joe Lupica. Johnson was 89.

Johnson was in his early 30s when, in 1955, he used his World War II experience as a radar technician, and postwar employment in the electronics industry, to establish a company called Valor Electronics. Based in Gardena, California, Valor made various components for military and industrial customers, and by the early 1960s it had expanded to roughly 100 employees.

As Valor was growing, so too was Johnson's own interest in amateur astronomy. After first purchasing 4-inch and later a 10-inch Newtonian reflector, Johnson then headed down a path followed by many amateurs of the day and turned to the hobby of telescope making. The first scope he made was an 8-inch $f/4$ rich-field Newtonian, soon followed by a 12-inch Cassegrain. Meanwhile, in 1960 he established an "Astro-Optical" division of Valor.

His next telescope project demonstrated that his telescope-making talent and energy would be truly formidable. This scope was a highly unconventional $18\frac{3}{4}$ -inch Cassegrain, made to be transportable. To reduce the weight of the inch-thick primary mirror, Johnson had a ribbed pattern sandblasted into the back of the glass blank. Six months and about \$1,000 later, he had a fork-mounted scope that could be disassembled and packed into a car in about 15 minutes.



On July 28, 1962, he hauled the scope to the parking area atop Mount Pinos for its public debut at one of the Los Angeles Astronomical Society's star parties. It made a big impression among the group's advanced amateurs, who examined it in detail. The telescope was so noteworthy that it became the cover story of *Sky & Telescope's* March 1963 issue.

But it was another *S&T* article that prompted Johnson to change history. As he was finishing the $18\frac{3}{4}$ -inch scope, Donald Willey published a seminal analysis of Cassegrain telescope designs in the April 1962 issue. Johnson was intrigued by the excellent off-axis optical performance of the Schmidt-Cassegrain design. Based on his experience building the $18\frac{3}{4}$ -inch scope and a plan to use optics made to order by Perkin-

Elmer Corporation, Johnson took the bold step of advertising a 20-inch multipurpose Schmidt-Cassegrain telescope, called the "Celestronic 20," in *S&T*'s January 1964 issue.

The Astro-Optical Division name quickly morphed to Celestron Pacific, a division of Valor. By December Valor was dropped, and Celestron's ad introduced pictures of 4-, 6-, 10-, and 22-inch Schmidt-Cassegrain telescopes as well as mention of a 36-inch. But most of Celestron's sales were for the 10-inch, which cost about \$2,000 when outfitted with basic accessories.

Despite his initial arrangement with Perkin-Elmer, Johnson was soon making his own Schmidt-Cassegrain optics. A breakthrough came early on when Johnson created a method for mass producing the telescopes' optically complex corrector plates. For this and other contributions to optics, Johnson was later awarded the Optical Society of America's David Richardson Medal; he was one of only a few non-Ph.D. optical engineers to ever receive the honor.

In the late 1960s, Johnson and his colleagues speculated that the sweet spot of the market would be for a compact, quality 8-inch portable Schmidt-Cassegrain costing around \$1,000. And unlike most telescopes of the day, it should be as photography-friendly as the technology of the time allowed. Johnson returned to the drafting table, and what emerged was the \$850 "classic C8," first advertised in *S&T*'s June 1970 issue. With a radically new orange and tan motif, the C8 was an overnight hit. It set the pattern for all the amateur Schmidt-Cassegrains that would follow in the coming decades from Celestron, its competitor Meade Instruments, and others.

Writes Celestron's president and CEO Joe Lupica: "Tom's innovative, pioneering spirit created a revolutionary method of mass producing an affordable Schmidt-Cassegrain telescope design, which allowed millions of amateur astronomers to pursue their passion for astronomy. Other notable achievements include a 1978 David Richardson Medal from the Optical Society of America, a 1993 Bruce Blair Medal from the Western Amateur Astronomers, and a 2009 Lifetime Achievement Award by the Small Telescope & Astronomical Society. Our hearts go out to Tom's wife and family and to all who were touched by his achievements and innovation."

Johnson's first really ambitious creation graced the cover of the March 1963 S&T

18 3/4" Cassegrain

