

The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

November 2017 — 647th General Meeting Notice



EVENT HORIZON

Founded in 1960, the San Mateo County Astronomical Society is a 501(c)(3) non-profit organization for amateur astronomers and interested members of the public. Visitors may attend Society meetings and lectures on the first Friday of each month, September to June, and star parties two Saturdays a month. All events are free for visitors and guests. Family memberships are offered at a nominal annual cost. Detailed info is found at www.smcasastro.com, where those who want can join via Paypal. Membership includes access to this monthly Event Horizon newsletter, discounted costs and subscriptions to calendars and magazines, monthly star parties of the Society and the College of San Mateo, use of loaner telescopes, field trips, social occasions and general meetings presenting guest speakers and programs. For additional information, please email us at SMCAS@live.com, or call us at (650) 678-2762.



KEN LUM at the eyepiece of the 60-inch reflector telescope at the historic Mt. Wilson Observatory near Pasadena, CA, which he toured as part of this year's Antique Telescope Society convention. The 60-inch reflector was the largest operational telescope in the world at its first light in 1908. Ken's full report on the convention begins on p. 4.

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DATES TO SAVE

Nov 3: General meeting, pizza, and presentation at the CSM Planetarium. Details on page 3.

Nov 13: Last day to order discounted 2018 astronomy publications through SMCAS. See page 11.

Nov 21: SMCAS Board Meeting, CSM ISC room.

Dec 2: Holiday Party at Crystal Springs Methodist Church.

More events and further details on page 7.

President's Corner

As expected, October was a busy month for SMCAS! The month kicked off with our General Meeting and Presentation featuring Dr. Monica Kress, Physics and Astronomy Professor from San Jose State University. She gave us an excellent presentation on the science and adventure of hunting for meteorites in Antarctica. After her presentation, Professor Darryl Stanford and I gave her a tour of the CSM Observatory.

We had two Crestview star parties, on October 14 and 21. At the October 21 star party SMCAS hosted a multitude of students and families from the San Carlos Charter Learning Center, resulting in much higher attendance than is typical for our Crestview parties. Thanks to Ed Pieret for leading this!

A big event for us was the SLAC Kid's Night, which actually begins in the afternoon, running from 4–8pm. We have been involved with this event for several years now, running activities and solar scopes during the daylight, and hosting a star party after dark. This year's event drew around 700 kids and family members of SLAC employees. Thanks to our 10 volunteers for making this such a success!

Happy stargazing, and see you at the November meeting!

Marion Weiler

President, San Mateo County Astronomical Society



Dr Monica Kress, the speaker at the October SMCAS meeting, standing with SMCAS president Marion Weiler next to CSM's 20-inch Ritchey-Chrétien telescope.



Left, Ed Pieret at SLAC with the Cookie Monster. Right, solar scope viewing at SLAC.

SMCAS General Meeting and Presentation on Friday November 3, 2017

Dr Gibor Basri

Professor Emeritus of Astronomy, University of California, Berkeley

Are Red Dwarf Planets Habitable?

Friday, November 3, 2017 , College of San Mateo, Building 36
SMCAS General meeting at 7:00 p.m. ISC Room, room 110
Presentation at 8:00 p.m. in the CSM Planetarium
Free and open to the public, free parking (lots 5 and 6 recommended)

Most recent news about exoplanets has highlighted the discovery of Earth-sized planets in the habitable zone of red dwarf stars. This is partly because such planets are more easily found, partly because most stars are red dwarfs (cooler and smaller than the Sun), and partly because smaller stars apparently tend to have smaller planets. In addition, red dwarfs live a very long time in a stable phase. Dr Basri will discuss the discoveries and give background on red dwarfs.



Whether a planet around a red dwarf could harbor earth-like life is a very active question; 15 years ago most astronomers would have answered “no”. Dr Basri will explain why and how our thinking is evolving. Issues include tidal locking, strong stellar flares, and heating and water loss by UV emission (especially during the pre-main sequence phase, which is very long for red dwarfs). He will suggest potential ways around all these problems. He will also discuss whether the usual concept of “habitable zone” is too restrictive.



Dr Basri earned a BSc in Physics from Stanford University, and a PhD in Astrophysics from the Univ. of Colorado, Boulder. A Chancellor's Postdoctoral Fellowship then brought him to Berkeley, where he has been ever since. His work in the 1980s concentrated on star formation and T Tauri stars, as well as stellar magnetic activity. In the 1990s he became an early pioneer in the study of brown dwarfs. He was a co-investigator on the Kepler mission. He became Professor of the Graduate School in 2016 (meaning he is an active Emeritus professor). Dr Basri is involved in science education, in particular encouraging the participation of minorities in science. His efforts in this were recognized by the Chancellor's Award for Advancing Institutional Excellence in 2006. In 2007 he was selected as the founding Vice Chancellor for Equity and Inclusion at Berkeley. He was awarded the Berkeley Citation (the campus' highest honor) in 2015.

[Members Forum](#)

Antique Telescope Society Tour of Mt. Wilson

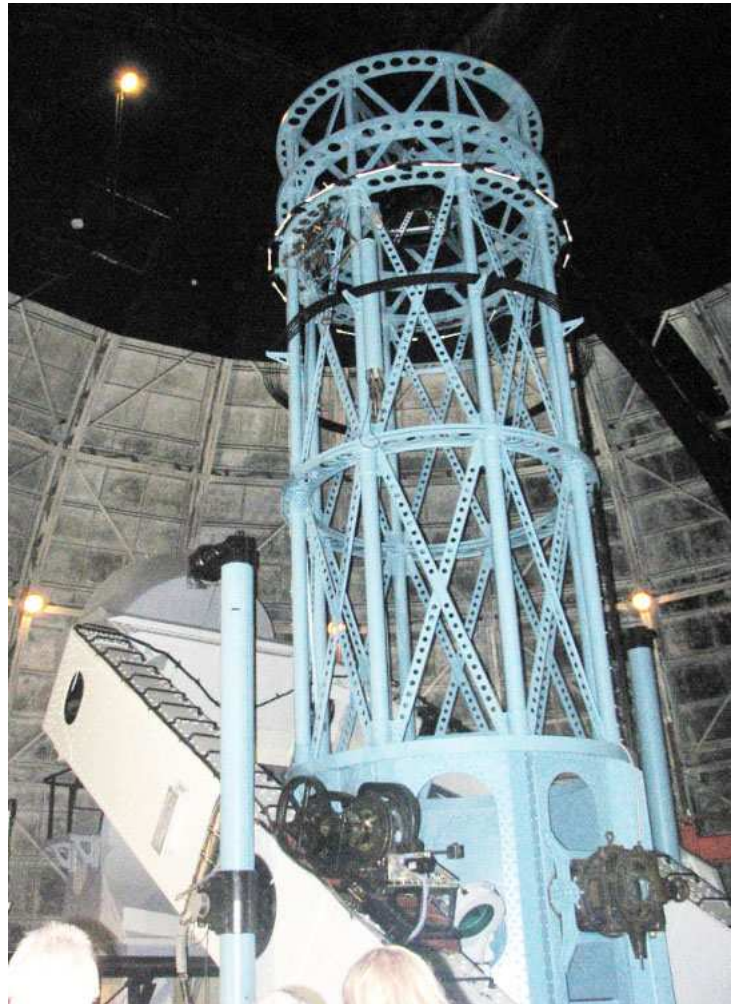
By Ken Lum

This year's convention of the Antique Telescope Society was a return visit to the Mt. Wilson Observatory in southern California, which the Society had visited before in 1997. One reason for this visit was an ongoing 100th anniversary celebration of the legendary 100 inch Hooker reflector since its first light in 1917.

In addition to the 100 inch, we also toured other instruments on the mountain, including the 60 inch reflector of 1908 (photo on p. 1), and the Snow horizontal and 150 ft vertical solar telescopes of 1906 and 1912 respectively. There was also a 60 ft vertical solar tower telescope which was not open at this time. Our group observed one night with the 60 inch and observed the Sun with the 150 ft tower telescope. The 100 inch is now configured for visual observing, although we did not look through it this time.

The Mt. Wilson observatory is perhaps the most historically significant astronomical observatory in the world. Many of the major topics in modern astronomy saw their beginnings here including stellar and solar astrophysics, galactic and extra-galactic astronomy and cosmology. Among the observatory's many major discoveries were:

- The first demonstration of magnetic fields on sunspots (1908) by George E. Hale
- The development of the spectrohelioscope (1924) by George E. Hale. Its photographic counterpart, the spectroheliograph, was developed earlier, also by Hale.
- The first description of a white dwarf star (1915) by Walter S. Adams
- The discovery of the size of the Milky Way galaxy and the location of the Sun and its Solar System about two thirds of the galactic radius from the center (1914–19) by Harlow Shapley.using observing techniques pioneered



The 100-inch Hooker Reflector

by Henrietta Leavitt.

- The discovery that “spiral nebulae” were external galaxies separate from the Milky Way (1922–24) by Edwin Hubble, again using techniques pioneered by Henrietta Leavitt.
- The expanding Universe (1929) by Edwin Hubble and Milton Humason extending earlier discoveries by Vesto Slipher at the Lowell Observatory in Flagstaff, AZ. This discovery led to today's Big Bang theory of the origin of the Universe.

The observatory was founded in 1906 by George Ellery Hale who would go on to found the

Continued on p. 5

Mt. Wilson, continued from p. 4

observatories with the worlds largest telescopes at their time starting with the Yerkes Observatory in southern Wisconsin in 1897. Upon hearing that seeing conditions were superior on the top of Mt. Hamilton at Lick Observatory in San Jose, Hale initiated the process of building even bigger telescopes on Mt. Wilson. Hale's instrument maker, George Willis Ritchey, built most of the telescopes now crowning the mountain top. Upon retirement from the directorship of Mt. Wilson, Hale initiated the process that led to the building of the Mt. Palomar Observatory outside San Diego where the 200 inch telescope saw first light in 1948. Hale died in 1938 before the Palomar Observatory was completed.

One of the most appealing sites we visited was Hale's retirement home in Pasadena just south of the Caltech campus, which Hale helped establish. It contains a vertical solar telescope with which Hale continued to do solar research. The telescope still works, and we were able to observe the Sun with it during our visit. The house later became a retreat for the directors of the Mt. Wilson Observatory, and it was in the home's beautiful library that discussions about the construction of the 200 inch Palomar telescope were begun in the late 1920s. It has remained a private home and is not open to the public. People from the Mt. Wilson institute and the current residents of the house very generously allowed us the privilege of visiting this historic site.

The story of Mt. Wilson is described in detail in many publications. Unquestionably the best is a book [2] by the late UC Santa Cruz astronomer, Dr. Donald Osterbrock who was an active member of the Antique Telescope Society and frequent contributor of articles to the Society's journal. It is written with great accuracy and sympathy for these great pioneers of astronomy.



The 150 ft solar telescope

One week after our visit, a fire broke out on the mountain posing a threat to the observatory and its environs and causing evacuation of the facility. We can only hope these fires can continue to be properly controlled into the long term future. The last significant fire threat to the observatory was the Station fire in 2009.

References

1. Website: www.mtwilson.edu
2. Osterbrock, D., *Pauper and Prince: Ritchey, Hale, and Big American Telescopes* (1993).
3. Naeye, Robert, Observing through a Truly Large Telescope, *Sky and Telescope*, September, 2016 (an account of visual observing with the 100-inch)
4. Ted Rafferty, George Willis Ritchey's Great Adventure, *Sky and Telescope*, October, 2016

Borrow a Telescope and Use it to Wow Your Guests over the Holidays

By Ed Pieret

Even a view of the Moon through one of our loaner telescopes will blow the socks off your visitors.

SMCAS Loaner Telescope Program

SMCAS has several loaner telescopes available for active members to borrow. They are meant to be an introduction to the wonders of astronomy and a way for members to assess their interest prior to buying their own telescope or purchasing an upgrade.

Since a new member might not yet know what kind of telescope would be best, feel free to contact Ed Pieret (EPIERET@comcast.net or (650)862-9602). He will be happy to sit down with you to discuss your interests and show you how the the various instruments in our inventory could be used.

The rules for borrowing a telescope are:

1. Loan period is for 60 days. It can be extended for another 60 days upon request provided there are no requests for the same telescope.
2. Borrowers are expected to participate in SMCAS outreach activities including Crestview Star Parties as much as possible.
3. If the borrower loses interest in astronomy or buys a telescope, the loaner and accessories are to be returned promptly.
4. Active membership is required to borrow and keep a loaner telescope.
5. SMCAS Astronomers will assist the borrower in setup and productive use of the telescope.

The following is a list of the current loaner telescopes.

Brand	Type	Name	Aperture	Focal	Comments	Status
Jason	Compound	Comet 334	114 mm	1000 mm	Integrated finder. Also separate finder and laser dot finder. Erecting Prism, T-Adapter. .75 in optics. Separate tripod.	Available
Mead	Refractor	ETX 70AT	70 mm	350 mm	Goto, Hard Fitted Case, Separate Tripod in Soft Case, assorted eyepieces including electronic eyepiece.	Available
Orion	Reflector	Skyview 4.5 deluxe EQ	4.5 in.	900 mm	All enclosed in soft case	Available
Edmunds	Compound	Astroscan	4.12 in.	445 mm	Wood tripod - not stable. Best on tabletop.	Available
Edmunds	Compound	Astroscan	4.12 in.	445 mm	Has stable tripod	Used for outreach
Home made	Reflector	Dobsonian	8 in.		In good shape. On wheels	Available
Celestron	Compound	8 SE	8 in.	80 in.	2 inch optics, Full goto, New Condition, Fitted case, Standard tripod, 30mm. 2 in. eyepiece.	Available
Celestron	Compound	SP-C8	8 in.	80 in.	Has heavy Equatorial tripod, electronic controls, fitted case	Available
Orion	Reflector	Dobsonian	8 in.		Needs cleaning and adjustment	Needs Work
Sky Window	Mirror	11X 80 Binoculars				Available

Upcoming SMCAS Meetings and Events

We have many fun and interesting activities planned in the coming months. See the web site (www.smcasastro.com) or contact Marion Weiler (mgwe@pacbell.net) for more information or to volunteer at any of these events. Please contact Ed Pieret (epieret@comcast.net) if you are available to help out with Star Parties at Crestview Park and other locations.

Fri, Nov 3	7:00 pm	General Meeting, Pizza Social and Presentation
Sat, Nov 11	5:00 pm	Crestview Park Star Party
Mon, Nov 13		Last day to order discounted 2018 astronomy publications through SMCAS. See page 11.
Sat, Nov 18	5:00 pm	Crestview Park Star Party
Tue, Nov 21	7:00 pm	SMCAS Board Meeting
Sat, Dec 2	6:00 pm	Holiday Party, Crystal Springs Methodist Church, San Mateo
Sat, Dec 9	5:00 pm	Crestview Park Star Party
Thu, Dec 14	Midnight+	Geminids Meteor Shower peaks — King of meteor showers (moon is favorable, rising just before 4am)
Tue, Dec 19	7:00 pm	SMCAS Board Meeting
Sat, Dec 23	5:00 pm	Crestview Park Star Party

General meetings and board meetings are held in the ISC Room (room 110) in building 36 at the College of San Mateo. For directions to the building or to the star party site at Crestview Park in San Carlos, see page 10. All SMCAS members are welcome at board meetings.

Crystal Springs Methodist Church is located at 2145 Bunker Hill Drive, San Mateo. The Holiday Party will be in the Fireside Room.

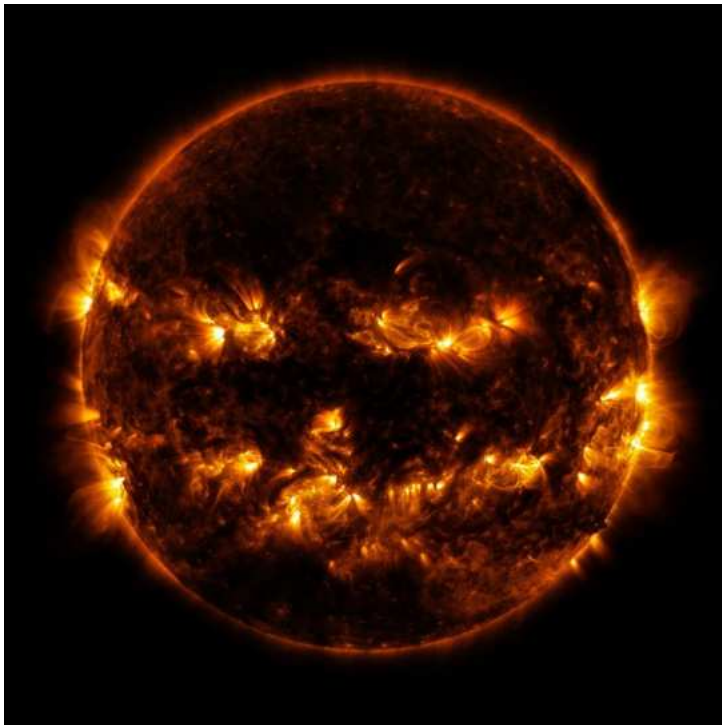
The times given for the star parties are approximately at sunset. Arrive then to set up a telescope or if you want to learn about telescopes. If you would like to merely see the wonders of the night sky through our telescopes, observing starts about an hour later and usually continues for about two hours.

Spooky in Space: NASA Images for Halloween

By Linda Hermans-Killiam

Have you ever seen a cloud that looks sort of like a rabbit? Or maybe a rock formation that looks a bit like an elephant? Although you know that a cloud isn't really a giant rabbit in the sky, it's still fun to look for patterns in images from nature. Can you spot some familiar spooky sites in the space images below?

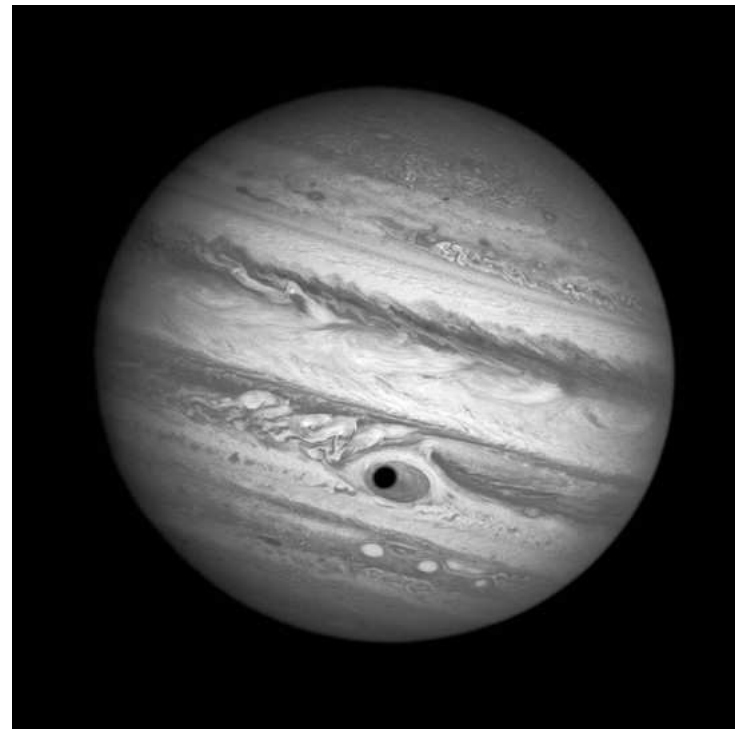
This might look like the grinning face of a jack-o'-lantern, but it's actually a picture of our Sun! In this image, taken by NASA's Solar Dynamics Observatory, the glowing eyes, nose and mouth are some of the Sun's active regions. These regions give off lots of light and energy. This causes them to appear brighter against the rest of the Sun. Active regions are constantly changing locations on the Sun. On the day this image was captured, they just happened to look like a face!



The Sun. Credit: NASA/GSFC/SDO

This is a Hubble Space Telescope image of Jupiter. Do you notice something that looks like a big eye peeking back at you? That's actually the

shadow of Jupiter's moon Ganymede as it passed in front of the planet's Great Red Spot. Jupiter's Great Red Spot is a gigantic, oval shaped storm that is larger than Earth and is shrinking. It has been on Jupiter for several hundred years, and its winds can swirl up to 400 miles per hour!



Jupiter. Credit: NASA/ESA/A. Simon (Goddard Space Flight Center)

Can you see the profile of a witch in the next image? This image, from NASA's Wide-Field Infrared Survey Explorer, shows the Witch Head nebula. The nebula is made up of clouds of dust heated by starlight. These dust clouds are where new stars are born. Here, the dust clouds happen to be in the shape of an open mouth, long nose and pointy chin.

Continued on p. 9

Spooky Space Images, continued from p. 8



Witch Head nebula. Credit: NASA/JPL-Caltech

The Black Widow Nebula looks like a giant spider in space. It is a huge cloud of gas and dust containing massive young stars. Radiation and winds from these stars push the dust and gas



Black Widow nebula. Credit: NASA/JPL-Caltech/Univ. of Wisc.

around, creating a spider-like shape. This image is from NASA's Spitzer Space Telescope.



Martian Rocks. Credit: NASA/JPL-CALTECH/MSSS

Did a skeleton lose one of its leg bones on Mars? Nope! It's just an image of a Martian rock. NASA's Curiosity rover captured this image. The rock was probably shaped to look this way over time by wind or water. If life ever existed on Mars, scientists expect that it would be small organisms called microbes. So, it isn't likely that we'll ever find a large fossil on Mars!

To learn some fun planet facts and make a planet mask, check out NASA Space Place: spaceplace.nasa.gov/planet-masks

This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

November Rise and Set Chart

SMCAS 2017 (PST)		Nov 11 Rise	Nov 11 Set	Nov 18 Rise	Nov 18 Set
Sun		6:45 AM	5:00 PM	6:53 AM	4:55 PM
Moon		-11:54 AM	1:40 PM	6:52 AM	5:34 PM
Mercury	After sunset	8:26 AM	5:54 PM	8:45 AM	6:01 PM
Venus	Before sunrise	5:33 AM	4:24 PM	5:49 AM	4:21 PM
Mars	In the wee hours	3:42 AM	3:23 PM	3:36 AM	3:06 PM
Jupiter	Before sunrise	5:43 AM	4:26 PM	5:23 AM	4:03 PM
Jupiter's moons		e i j g c		e i j c g	
1 PM, East on left		J=Jupiter, c=Callisto, e=Europa, g=Ganymede, i=Io			
Saturn	After sunset	9:37 AM	7:14 PM	9:12 AM	6:50 PM
Uranus	Most of the night	3:48 PM	4:53 AM	3:20 PM	4:25 AM
Neptune	Much of the night	1:59 PM	1:17 AM	1:32 PM	12:49 AM
Pluto	In the evening	11:08 AM	8:50 PM	10:41 AM	8:23 PM

- Standard time begins on November 5.
- Negative moonrise means the previous day.

– courtesy of Ron Cardinale

Fundraising for the Group: SMCAS Participates in AmazonSmile and Receives a Percentage of Your Purchase

SMCAS is now enrolled in AmazonSmile, a program that enables certified 501(c)(3) non-profit organizations to receive donations from eligible purchases at Amazon.



To enroll in the program, go to smile.amazon.com. On your first visit to this site, you can select a charitable organization – San Mateo County Astronomical Society (SMCAS) – that will receive 0.5% of the purchase price of eligible items on Amazon. How will you know if an item is eligible? Items are clearly and literally marked on the product detail pages with “Eligible for AmazonSmile donation.” For more information, go to smile.amazon.com/about.

November 2017						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29 6:16 PM Sunset	30	31	01	02	03 7:00 PM General Membership Meetin	04
05 6:09 PM Sunset	06	07	08	09	10	11 5:00 PM Crestview Star Party
12 5:02 PM Sunset	13	14	15	16	17	18 5:00 PM Crestview Star Party
19 4:57 PM Sunset	20	21	22	23	24	25
26 4:54 PM Sunset	27	28	29	30	01 7:00 PM General Membership Meetin	02 6:00 PM Holiday Party

• observing event • club event • community event

Calendar courtesy of Ed Pieret

SMCAS Year-End Publication Orders

By Ed Ching

Orders for year-end publications must be submitted by mid-November to ensure delivery in early December. I will submit the order on Nov 15, so if you want to order, you must pay SMCAS (exact change in cash or check) on or before Nov 13. Only paid 2017 or 2018 SMCAS members will be accommodated, and all quoted prices include shipping. The publications we will handle are:

- [2018 Astronomy Magazine Deep Space Mysteries Wall Calendar](#): monthly wall calendars with astronomical images each month, and interesting events noted on appropriate days, including moon phases. Price is \$7 each, compared to the list \$12.99.
- [2018 RASC Observer's Handbook](#): Price is \$26.50 each, compared to the list about \$32.

- [RASC Explore the Universe Guide](#): A new SMCAS year-end offering which is a beginner's observing guide introducing proper practices and techniques with targets of stars, constellations, lunar, planetary, deep sky, and other objects, requiring only binoculars. Price is \$22.50, compared to the list about \$29.

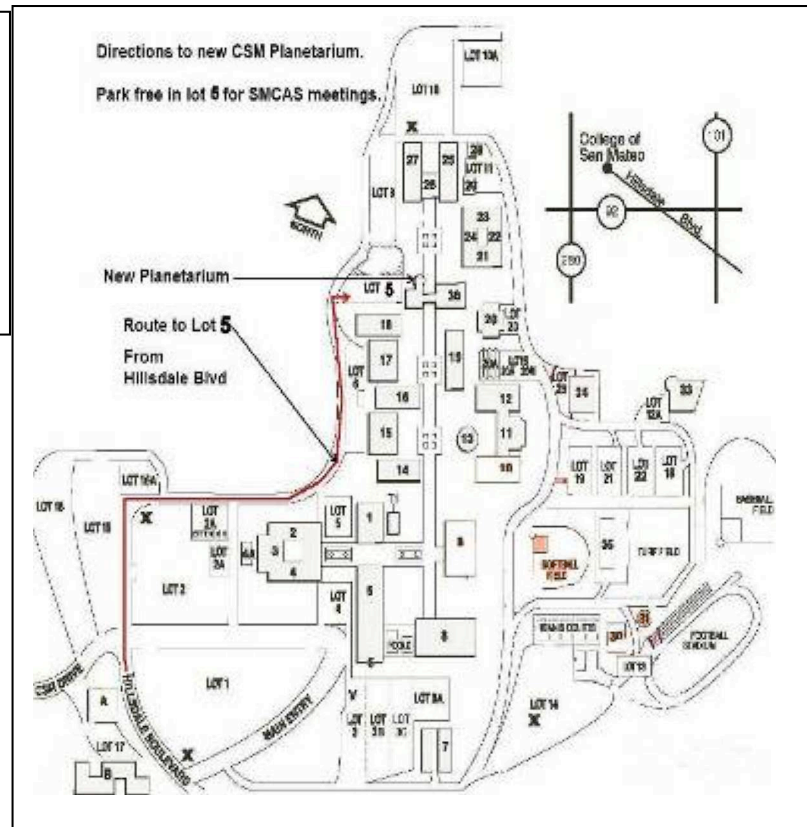
To order, please submit payment to Ed Ching (chinged@gmail.com, checks written to SMCAS) with your name and explicit instructions on how many of which publication you would like. Payment must be received before the Nov 13 deadline, preferably at the Nov 3 general meeting. Publications should arrive in December, and efforts will be made to make items available for pickup expeditiously thereafter.

Directions to SMCAS Meetings at CSM, and to Star Parties

Star Parties are Free to Members and Visitors and are Held Regularly, Weather Permitting

Directions to the CSM Planetarium for Meetings

After exiting Hwy 92 at Hillsdale Blvd, climb the hill towards CSM, passing two traffic lights to the stop sign at the top. Continue straight, bear right then, after the 2nd stop sign, bear left over the rise. Enter the next parking lot on the right, called Lot 5, "Marie Curie". Science Bldg 36 and the planetarium lie straight ahead. Enter Bldg. 36 thru the door facing the lot, or walk around the dome to the courtyard entrance.



Crestview Park

Come on out, and bring the kids, for a mind-blowing look at the Universe!

Bring your binoculars, telescopes, star guides, and lounge chairs for some informal star gazing at Crestview Park.

Dress warmly and wear a hat. Only visitors with telescopes should drive in. Others should park on the street and walk in, or arrive before dark so that car headlights don't affect the observers' dark adaptation. Bring small flash-lights only, covered with red cellophane or red balloon.

These measures avoid safety issues of maneuvering in the dark, as well as ruining the night vision of the viewers.

Please don't touch a telescope without permission. And, parents, please don't let children run around in the dark.

From Hwy 101 or El Camino, take Brittan Avenue in San Carlos, west (to the hills). Follow Brittan 2.3 miles (from El Camino) to Crestview Drive. Turn right on Crestview. In half-a-block, you will see a small blue posted sign with an arrow, indicating the entry road into Crestview Park. It lies between houses with addresses #998 and #1000 Crestview Drive.

From Highway 280, take Edgewood Road exit. Go east (toward the Bay) about 0.8 miles. Turn left at Crestview Drive. Go 0.5 mile uphill to where Crestview meets Brittan. Again, drive the half-block, to the sign on the right, and the entry road on the left.

Directions to Crestview Park for Star Parties

Note: If bringing a telescope and arriving after dark, please enter the Park with your headlamps and white interior lights off. If you aren't bringing a telescope, whether before or after dark, please park along Crestview Drive, and walk in.

2nd Note: Crestview Park is residential, adjacent to homes and backyards. Before inviting potentially noisy groups, please call Ed Pieret at (650) 595-3691 for advice and advisories. Call Ed also to check the weather and 'sky clock', and to see whether the star party is still scheduled.



San Mateo County Astronomical Society Membership Application

rev 04022017

SMCAS@live.com; P.O. Box 974, Station A, San Mateo CA 94403; (650) 678-2762

Date: _____ Please check one: [] New Member or [] Renewal

[] \$30 Regular Family Membership; [] \$15 Student Membership

All members, please indicate areas of interest below. New members, please complete entire form. Renewing members, please provide your name and any information that has changed in the last year.

We will list your name, address, email address, and phone number(s) in our membership roster unless you have checked the box preceding that information. The membership roster is distributed to active members only.

Each member's name and mailing address must be provided to the Astronomical League (AL), SMCAS' parent organization. If you don't want AL to have your phone number and email address, indicate below.

[] Name(s) _____ [] Email Address _____

[] Address _____

[] City & Zip Code _____

[] Phone Number(s): _____ [] Do not provide my phone number(s) to the AL.

[] Don't provide my email address to the AL. (Checking this means you can ONLY get **The Reflector** by regular mail)

Please check one: send **The Reflector** [] by mail, or [] by email.

Areas of Interest

SMCAS encourages member involvement. We invite you to provide additional information about your interests, skills, occupation and prior experience. Please identify SMCAS projects and functions that you might like to help facilitate.

Please indicate which of the following activities might be of interest to you:

_____ Star Parties - Do you own a telescope you can bring: Yes () No ()

_____ General Meetings - Finding (or being) a Speaker. Official greeter. Set up or take down ISC or refreshments.

_____ Family Science Day & Astronomy Festival (Usually at CSM the first Saturday in October).

_____ Social Events - Equinoctial and Summer Solstice potlucks, Summer Star-B-Que, Holiday Potluck.

_____ SMCAS Membership and Promotional Drives

_____ Communications – 'Event Horizon' Newsletter, Website(s), Facebook page, group email, Publicity posting.

_____ Educational Programs – School, museum and library star parties, Bay Area Astro teacher assistants.

Other/Comments: _____

<http://www.SMCASASTRO.com>