



EVENT HORIZON

The SAN MATEO COUNTY ASTRONOMICAL SOCIETY

April – June • 2023 Issue

794th General Meeting: April 7

795th General Meeting: May 5

796th General Meeting: June 6



Mike Ryan Commemorates 60 years with SMCAS

See page 11

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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 membership information is found at www.smcasas-tro.com/membership.html where those who want can join via PayPal. Membership also includes access to our Event Horizon newsletter, discounted costs and subscriptions to calendars and magazines, monthly Star Parties of the Society and the College of San Mateo, field trips, social occasions and general meetings presenting guest speakers and programs. For additional information, please email us at SMCAS@live.com or call (650) 678-2762.

Membership forms are available at the end of this newsletter. The Membership Application form is on the back page.

Upcoming Events

The Society and the City of San Carlos Parks Department host public Star Parties at Crestview Park, 1000 Crestview Drive, San Carlos. [Click here to see the schedule for the entire year.](#) See page 18 for directions and guidelines.

Saturday, April 1: SMCAS Equinox Dinner, 6 p.m., Crystal Springs United Methodist Church, 2145 Bunker Hill Drive, San Mateo. See page 5 for additional details.

Friday, April 7: 34th Annual Presentation of Art & Science: How to See with Artistic Eyes presentation by Mohsen Janatpour, 7 p.m., College of San Mateo Theatre (Building #3). See page 19 for directions to CSM.

Saturday, April 15: KIPAC's 20th Anniversary Community Day! 1 p.m. to 5 p.m. – Stanford Science & Engineering Quad. See page 7 for more details.

Saturday, April 15: Star Party – At sunset (7:45 p.m.) – Crestview Park

Saturday, April 22: Star Party – At sunset (7:51 p.m.) – Crestview Park

Friday, May 3: SMCAS General meeting, 7 p.m., College of San Mateo, ISC Room (#110) and presentation by a SMCAS Board Member Kevin Simpson, 8 p.m. in the Planetarium. See page 19 for directions to CSM.

Saturday, May 13: Star Party – At sunset (8:10 p.m.) – Crestview Park

Saturday, May 20: Star Party – At sunset (8:16 p.m.) – Crestview Park

Friday, June 2: SMCAS General meeting, 7 p.m., College of San Mateo, ISC Room (#110) and lecture by a speaker that's yet to be determined, 8 p.m. in the Planetarium. Be sure to check your emails and the website for updates. See page 19 for directions to CSM.

Saturday, June 10: Star Party – At sunset (8:29 p.m.) – Crestview Park

Saturday, June 17: Star Party – At sunset (8:33 p.m.) – Crestview Park

Cover: Mike Ryan (right) gives a speech at the 2022 StarBque as the outgoing president while Michael Cooke (left) takes on the role as our current president. Next to Cooke is his wife and SMCAS's graphic artist, Lisa Cooke. *Photo by Michelle Morales Torres.*

Prez's Corner

Greetings to the Society,

No foolin' we will be kicking off spring with a party on April 1, 6 p.m. to 9 p.m. It will be the SMCAS annual holiday party/equinox dinner at Crystal Springs United Methodist Church. There are more details on page 5. I hope to see you there for some good food, conversation and white elephant gift exchange.

April is going to be a busy month for us starting with the party above, our talk for April 7th will be the 34th Annual Art & Sciences presentation on CSM, then April 15 is the KIPAC Community Day which the board will participate in and members can go to. More details about these events can be found on pages 6 and 7, respectively. KIPAC is a great event for the kids. If you want to volunteer for this event let Ed Pieret, Marion Weiler or myself know.

Rumors have it that SpaceX is now eyeing April for Starship's first orbital launch.

Our lecture series continues in May and our own Board Member Kevin Simpson will do a presentation on using a Dobsonian style telescope. Should be a great one for members just starting to out use one. And in case you missed a talk you can always check our [YouTube channel](https://www.youtube.com/@smcasastro) (<https://www.youtube.com/@smcasastro>).

May will also be a time to see lots of galaxies as Virgo, Canes Venatici, Coma Berenices, Ursa Major will all be up and are filled with cool galaxies to look at.

We are looking to get a trip together to go to Hat Creek Radio Observatory. Hat Creek is home to the Allen Telescope Array which is dedicated to astronomical observations and a simultaneous search for extraterrestrial intelligence. So be on the lookout for that information.

So our survey had a false start and we had to do it again but hopefully we'll get everyone's input to plan the type of activities people want to do.

Clear Skies,



Michael Cooke
SMCAS President
tfbsaxman@hotmail.com

SMCAS Equinox Dinner – April 1, 6pm to 9pm



You're invited to SMCAS Equinox Dinner: Saturday, April 1
6 p.m. to 9 p.m.

Crystal Springs United Methodist Church, 2145 Bunker Hill Dr, San Mateo

This is a family friendly event bring the kids, arrive and leave at your convenience. Our party will be a potluck with a white elephant gift exchange (optional). Bring a wrapped gift of no more than \$25 to participate. Our board members will provide entrees, and you can bring any dish or drink you like to share. Try and label food for food allergies. Utensils will be provided but feel free to bring serving utensils for your dish.

If you can attend, [please RSVP here](#). When you fill out our sign-up sheet, let us know how many guests from your group, what dish you're bringing and if you would like to participate in the gift exchange. You can email our Board SMCASBD@groups.io if you have questions. We look forward to seeing you soon!

34th Presentation of Art & Science: How to See with Artistic Eyes Saturday: April 7, 7:30pm at CSM

April's SMCAS general meeting date coincides with the 34th Presentation of Art & Science at College of San Mateo so we've decided to make that event as our general meeting. As a result, the schedule is slightly different. The presentation is at 7:30 p.m. followed by a reception in the Theatre Lobby. The night will continue with telescope viewing going from 9 p.m. to 10 p.m.

Join Professor Mohsen Janatpour, math, physics & astronomy coordinator of Astronomy Program for a fascinating talk on, "How to See with Artistic and Scientific eyes," followed by a reception and stargazing with astronomy faculty. The presentation begins at 7:30 p.m. at CSM's Theatre, (Building #3). Janatpour says, "We have two worlds: In our outer world, we exist, interact with others, and deal with the everyday commerce of life. At the same time, we live, dream, imagine, and think in our inner universe. Our mental imagery connects these worlds, and how we connect them determines the nature of our reality. Moreover, that connection is governed by the way we see the world. Seeing with both artistic and scientific eyes is a fundamental and fulfilling exercise in visualization and is the topic of the 34th Presentation of Art & Science. I will demonstrate this by exhibiting some of my artwork and material from my



book, 'Conjunctive Theory: Mental Imagery in the Arts and Sciences' (in production by Cognella Publishing Company and available in June) ... " Telescopes will be set up outside, in front of the Theatre, courtesy of the San Mateo County Astronomical Society and CSM's Astronomy dept. With help from the experts, all will be treated to a spectacular view of celestial beauties. ♦

KIPAC's 20th Anniversary Community Day! Saturday: April 15

1 pm



The KIPAC building at Stanford.

Stanford's Kavli Institute for Particle Astrophysics & Cosmology is having its 20th Anniversary Community Day! It will be in the Science & Engineering Quad on April 15 from 1 p.m. to 5 p.m. Some SMCAS members will be volunteering for the event and [if interested in attending, it's recommended to register](#) since about 2,000 attendees are expected. If you haven't been yet, it's like an astronomy festival with many live demonstrations of experiments and hands-on activities. Some of the activities will be on Making Your Own Pulsar, Cooking A Comet, Experimenting with UV-sensitive Beads. There will also be a Gravity Simulator, an IR

Camera, Light & Spectroscopy, Vera Rubin Observatory Space Surveyors Game, Solar S'more and Ask an Astrophysicist Anything! just to name a few.

In addition, there will be a series of mini-science lectures introducing the latest discoveries made by KIPAC in the field of astronomy. The schedule is as follows:

1:30pm – 2pm: Supermassive Black Holes and How We Find Them (Merry Powell)

2pm – 2:30pm: Measuring the Unseen Universe with Strong Gravitational Lenses (Sebastian Wagner-Carena)

2:30pm – 3pm: The Loneliest Galaxies in the Universe (Mia de los Reyes)

3pm – 3:30pm: The Very First Stars in Our Universe (Tom Abel)

3:30 – 4pm: Shining Light on Dark Matter (Chiara Salemi)

4pm – 4:30pm: Keynote lecture: Learning About Dark Matter From the Tiniest Galaxies in the Universe (Risa Wechsler)

Lectures are in the Hewlett Teaching Center, 370 Jane Stanford Way, Palo Alto. ♦

General Meeting, Friday: May 3, 7pm & Presentation 8pm: Introduction to the Dobsonian Telescope

SMCAS Board Member Kevin Simpson will give a presentation on how to use a Dobsonian Telescope. It's a type of reflecting telescope that is very popular and reasonable. They work by reflecting the light travelling inside their optical tube assembly from a curved primary mirror to a flat secondary mirror which then directs the light to the focuser. What makes those telescopes "Dobsonian" is that they are mounted on a simple altazimuth mount, meaning it can be moved vertically or horizontally.

This telescope design was created by John Dobson in 1965, who wanted to make amateur astronomy accessible to a larger number of people. He nicknamed his project "the sidewalk telescope" because he used to take his Dobsonian telescope through the streets of San Francisco and let by passers look at the night sky through the eyepiece.

Learn how to properly collimate your telescope. This means aligning the primary mirror so that the light bouncing off it is perfectly directed toward the secondary mirror without any loss of light rays.

When you point a Dobsonian telescope at a celestial target, it collects light rays from that object through the aperture. This light travels inside the telescope's optical tube assembly and hits the parabolic mirror placed at the end of the tube. The light then bounces off the primary mirror and is directed towards the flat secondary mirror. It bounces off the secondary mirror again and is sent to the focuser where you place your eyepiece.

Also learn how to select and locate celestial objects for viewing. ♦



SMCAS Board Member Kevin Simpson sets up his Dobsonian 10-inch Orion GoTo. He usually sets it up with a Baader MaxBrite II binoviewer, with a pair of matching eyepieces. This allows people to use both eyes to view, which gives a slight 3D effect. The binoviewer has an attachment that boosts magnification of any pair of eyepieces by 1.7 times.

Measuring the Temperature of an Exoplanet with JWST

By Thomas Greene

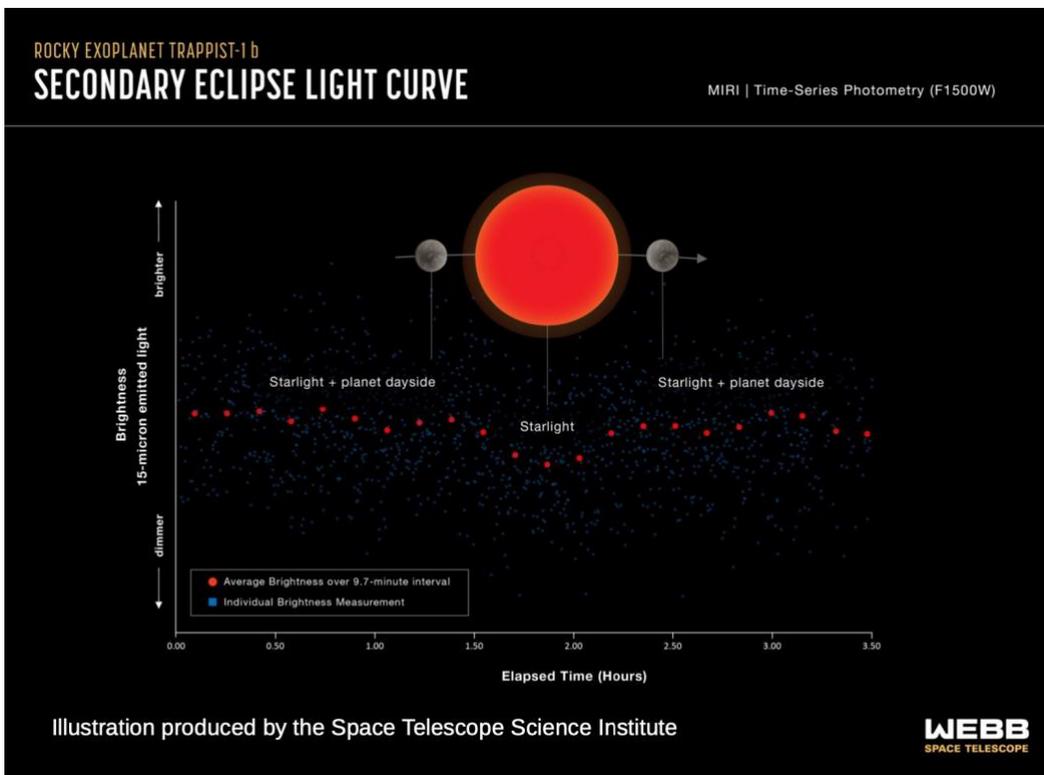
About 95% of Earth-sized planets orbit small, cool M dwarf stars which are much more active than the Sun. Can they sustain atmospheres and maybe harbor life? About 40 light-years away, the nearby TRAPPIST-1 system has seven rocky planets similar in size, mass, and insolation to Venus, Earth, and Mars, so it is a great place to look. The star, TRAPPIST-1, is in the constellation of Aquarius but can't be seen with the naked eye. It's redder than the sun and barely larger than Jupiter. It was first discovered in 1999 by astronomer John Gizis and colleagues. In February 2017, scientists

announced they had found seven planets around this star using the Transiting Planets and Planetesimals Small Telescope (TRAPPIST) in Chile and the Spitzer Space Telescope. In honor of the telescope used for the initial discovery, scientists began referring to the star as TRAPPIST-1. All of its planets have been observed with Hubble or Spitzer Space Telescopes, but no atmospheric features have been detected or strongly constrained. TRAPPIST-1 b is the closest planet to the system's M dwarf star and it receives four times as much irradiation as Earth receives from the Sun. This

relatively large amount of stellar heating suggests that its thermal emission may be measurable.

My research group used the Mid-InfraRed Instrument (MIRI) on James Webb Space Telescope to make five secondary eclipse observations of TRAPPIST-1 b at a wavelength of 15

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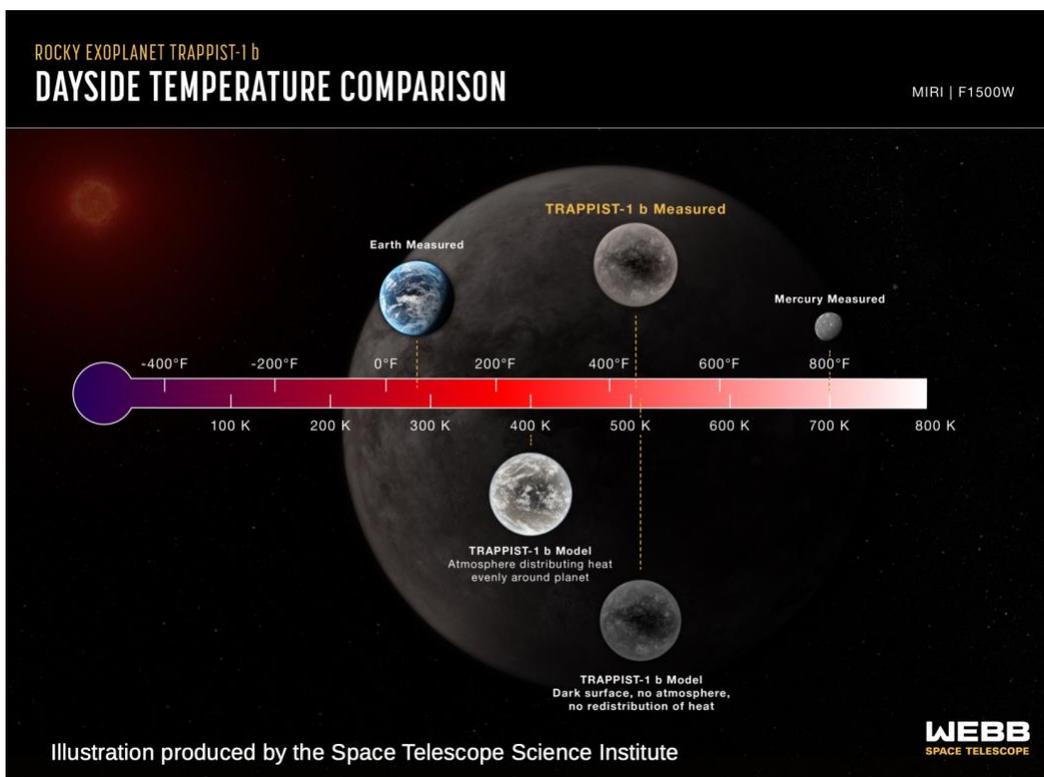
This infographic shows the change in brightness of 15-micron light emitted by the star-planet system over the course of 3.5 hours observed before, during, and after a secondary eclipse. The diagram and graph are aligned vertically to show the relationship between the geometry of the star-planet system as the planet orbits and the measurements on the graph. It shows that the brightness of the system decreases markedly as the planet moves behind the star.

Measuring the Temperature of an Exoplanet with JWST (cont'd)

microns (about 23 times redder than hydrogen alpha). We detected the secondary eclipse in each of five separate observations with a signal-to-noise ratio of 8.7 when all data are combined. These measurements are most consistent with re-radiation of the TRAPPIST-1 star's incident flux from only the dayside hemisphere of the planet. The most straightforward interpretation is that there is little or no planetary atmosphere redistributing radiation from the host star and also no detectable atmospheric absorption from carbon dioxide or other species. This result

was published in the journal Nature March 27. [A copy of the article is available by clicking here.](#)

This suggests the high initial brightness and frequent flaring of M stars can erode the atmospheres of their planets. However, TRAPPIST-1 b receives four times as much stellar flux from only the dayside hemisphere of the planet. Other TRAPPIST-1 planets at greater distances from the star may have retained atmospheres. Knowing this is imperative for understanding the habitability of Earth-size planets in the cosmos. ♦



Planets above the thermometer are dayside temperatures as measured using JWST's Mid-InfraRed Instrument to Solar System's rocky planets. Below are computer models showing what the temperature of TRAPPIST-1 b would be under a couple of atmospheric conditions. The JWST observations are most consistent with no atmosphere and no heat redistribution to the night side of the planet.

Sixty Years with SMCAS

By Mike Ryan

We have someone who's spent 60-years with our organization. In that respect, Mike Ryan is our most senior Society member. He joined the then-named San Mateo Astronomical Society on April 5 1963, and completes his 60th year with the Society on April 7. His full name is James Michael Ryan or, as one wag once opined, "the guy with three first names!" Mike has served in every official capacity for SMCAS, including eight years as president.

Mike likely could have served longer as president, but he's always espoused a personal philosophy that a principal role for a leader is to create opportunities and encourage ambition in others. To that end, Mike has recruited and helped advance many, if not most, of those who've led our group. He's always worked to mentor and promote others, then repeatedly stepped aside to give them the chance to lead and to shine. He's always asserted that one can achieve most anything if it doesn't matter to him who gets the credit.

Mike has notably encouraged women and young people, to assume positions of responsibility. At least twice, he has ended his own board tenure in order to make way for new volunteers with fresh ideas. Though he admits to having lost count, he has, in all, served as a board officer or director for close to 40 years.

Upon becoming president in 1976, Mike's first major initiative was to incorporate the organization as a California 501(c)(3) non-profit, renaming it the San Mateo County Astronomical Society. Mike sought guidance



SMCAS Board Member Mike Ryan and former president.

from Orange County Astronomers' President and Attorney, Byron Groves, to research, then physically write, our corporate founding documents, the Articles of Incorporation and By-Laws.

Mike's personal recruiting efforts in the 1970's grew the Society to its then-largest membership of 104. Later, in 2002, he achieved a membership of 142.

For years, Mike handled the Society publicity, prepared and posted flyers, wrote articles and announcements, contacted news desks, science and hobby editors. He posted news and features about astronomical and Society events in local publications and event calendars, as well as in local stores and libraries. He also offered personal training to new members, in astronomy, telescope-making and operation, demonstration techniques and organizational outreach.

During the period 2000-2006, Mike would routinely assemble 20-30 volunteers for public outreach events at CSM, enough that training and rehearsal sessions for setup,

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Sixty Years with SMCAS (cont'd)



Mike Ryan at the 1976 San Mateo Astronomical Society Installation Banquet at Belmont Holiday Inn.

takedown and presentation became standard practice. Mike led the Society weekend field trips to Fremont Peak, Lick Observatory, the California Academy of Sciences, the then-Chabot Observatory and other locations. In 1977, Mike saw his first of six total solar eclipses aboard the Sitmar cruise liner T.S.S. Fairsea, accompanied by other members Cleo Hawley and Leslie Nacanisi. He led or performed presentations at Star Parties, in classrooms, at scout meetings, community centers and school assemblies. And, for years, Mike stored, repaired and maintained Society equipment, plus served as its historian and archivist.

Mike has always tried to personally engage the membership. He's encouraged newcomers to get involved at an early stage,

and often invited them to take the lead. He's encouraged kids and families to prepare and present projects at outreach events, and always made it a point to give frequent and timely public recognition to folks who've made the effort.

Mike, at times, set up or fixed equipment for members and visitors. It was his standard practice to publicly salute and celebrate members by name, in general meetings, in the Event Horizon, and at the annual banquets, and publicly presented badges, plaques and certificates.

During his first tenure as president, Mike established and awarded badges denoting 'STAR' and 'NOVA' awards, for those who'd produced outstanding achievements. The NOVA award included a lifetime membership that waived further payment of dues. Fred Jacobs was the first and only member to receive it.

Many-a-time, Mike would personally phone members to solicit their attendance, support and participation. With membership consistently exceeding 100, that was a considerable task.

Mike served twice as editor of the Event Horizon. For a total of nearly twelve years, most of it using a wide-carriage Underwood manual typewriter. He came up with the double-entendre name "Event Horizon," replacing the original "SMAS Bulletin" and the short-lived "AstroNews."

He also set up, in 2000, the SMCAS Yahoogroup that, until 2017, was the Society's

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Sixty Years with SMCAS (cont'd)

principal online news and archival forum.

At the time of Gus Rissmann's passing in 1986, Mike preserved for years some of Gus's iconic memories and artifacts. He also preserved the 30-year solar observation archive compiled by lifetime member Manuel Fojo who passed on in 2006. Mike succeeded in finding space for it at Stanford University's Wilcox Solar Observatory. Manuel, and his daughter Carmen, were both graduates of Stanford.

Several times during the early-2000's, Mike held summer swim parties at his home for Society members. When Board member Yumi Miyamoto arranged a sister-city relationship for San Mateo with Toyonaka, Japan, she escorted contest-winning exchange students there for a week. Mike hosted a special event for them to meet and share experiences with our Society young people.

During the Leonid meteor storm of 2001, Mike recruited to membership Richard Bennion, owner of a computer website company called Broadchoice.com and a budding digital astrophotographer extraordinaire. Mike, an experienced planetarium programmer and lecturer, scripted and narrated two events that Rick dubbed 'RealSky Starshows', performed in October 2003 and April 2004.

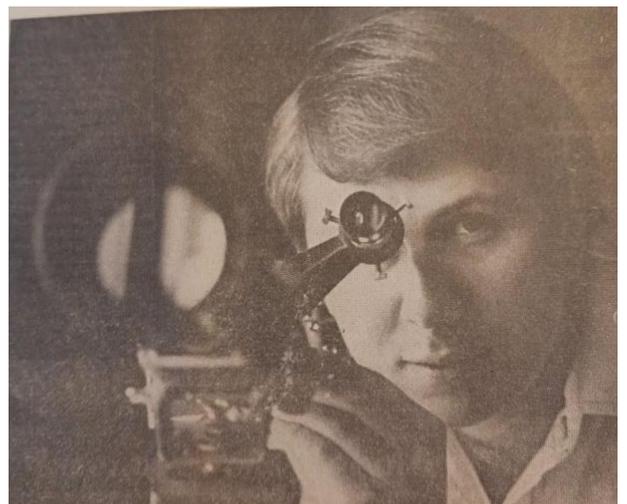
Featuring Rick's real-time astronomical imagery from automated, computer-driven telescopes, and assisted by CSM's staff and logistical support, these multimedia extravaganzas became two of the most stellar (no pun intended) presentation events in the Society's (and CSM's) history.

They were presented outdoors under clear night skies, in theatre-style seating, to audiences of about 140 and 400 respectively, using a 13-foot rear-projection screen, and accompanied by (then unique) green lasers, magenta mood lights and background music.

On the evening of August 27 2003, the 36 million-mile closest approach of the planet Mars in 60,000 years Mike, appearing on behalf of his employer, Morrison Planetarium, gave a media-hailed presentation to many hundreds of people at the Clos Pegase winery (named for Pegasus, the Flying Horse) near Calistoga. Four years later, in August 2007, on the Napa Valley Wine Train, Mike and his family found folks who still recalled attending that event.

That same night, SMCAS's committed volunteers also "went beyond the call of duty" at the CSM upper campus. They hosted at least 2,000 members of the public, and many more after they stopped counting.

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Mike Ryan featured in the San Mateo County Times at the age of 28.

Sixty Years with SMCAS (cont'd)

Rick Bennion was inspired enough by his experiences to offer the Society his company's new architecture, that hosted our SMCAS website until about 2015. Ours became the prototype and demonstration model, provided us at no cost, for what would become his company's product offering to other clubs. Our past-president and current VP, Ed Pieret, a retired computer engineer, assumed the major role in tailoring and maintaining our website, now located with GoDaddy.

Upon resuming the presidency in 2000, Mike Ryan returned the Society to the College of San Mateo following a nearly 20-year absence, during which we met at Bowditch Middle School in Foster City. Working directly with Dean of Math and Science Dr. Robert Kowerski, Mike helped led the burgeoning SMCAS public outreach programs at CSM through 2006.

With the support of CSM President Dr. Shirley Kelly, Vice President Grace Sonner and Chancellor Ron Galatolo of the San Mateo County Community College District, Mike established a cooperative relationship between the Society and the College. Mike loaned his own Celestron C14 telescope to CSM for three years, as the largest instrument at their observatory until the District funded the 20-inch RC research-grade reflecting telescope that replaced it.

Until August 2006 and completion of the new Building 36 Science Center, we were the lead partner for community science outreach at CSM, initiating planning and publicity, and providing volunteers and equipment. The master plan for Building 36 did not initially include the new planetarium or an observatory, but Mike took the occasion of the September 2006 "Art and Science" lecture to congratulate the retiring Dr. Kowerski, on the new facility. To Mike's surprise he, in turn, replied "No! Congratulations to YOU!" When asked what he

meant, Dr. Kowerski explained that it was the Society's dedicated volunteerism and leadership that enabled him to convince the District to fund both the new planetarium and the observatory.

He complimented our members' skill and dedication for attracting and impressing public visitors by the hundreds. He named our people, and our performance, as the prime factors that bought CSM's Astronomy Department its dream facilities.

Bob Kowerski also credited our successful public outreach with convincing the District to feature astronomy as CSM's forefront program. It achieved astronomical prominence among California's community colleges, and showcases CSM's reputation beyond our county, and even our state.

When the funding bond issues did not pay to equip the new astronomical facilities in 2006, Mike helped with a District fund-raising drive, which brought in \$65,000, about one-third of the total subsequently donated. He thanks those members, friends and others who helped to make it succeed. Their names are prominently displayed on the wall of contributors in the planetarium's entrance lobby, including several in whose names Mike's own donations were made.

In closing, Mike acknowledges the many fellow Society members whose commitment, service, consideration friendship and generosity have aided his efforts to make SMCAS a beneficial resource and experience for its members and the community. Whether by serving in office, or by contributing time and technical skills, to all those who've worked with him, assisted and supported him toward those goals, Mike conveys his profound thanks. ♦

Moon Halos

By Michelle Morales Torres

As the rain and cloudy skies continue, let's explore another phenomena that occurs with moon since it's something we always can see between clouds and perhaps it's something you've may have observed lately. Have you ever noticed a ring around the moon? They're caused by ice particles. It makes sense that some may have recently been seen. It happens when light hits the ice particles that are in high altitude cirrus or cirrostratus clouds. These clouds are between 15,000 and 30,000 feet. It is especially typical before hurricanes and tropical storms since the high clouds are thin.

When I first noticed it, some friends told me was it was old wives' tale that meant it would rain the next day. I estimate eight out of 10 times I saw a ring around the moon, it rained the next day. It made me suspect that perhaps there could be some truth to this old wives' tale. My research confirmed that it's not an old wives' tale because it's something to be considered true; old wives' tales are not. Furthermore, there's a saying for it – "Halo around the moon, rain soon." It's considered to be a weather proverb.

Instead of halo, some call it a moonbow or a lunar rainbow. According to Almanac.com, the size of the moonbow depends on how high the moon is in the sky – the lower the moon, the bigger the moonbow. The largest moonbows appear when the moon is within an hour of rising or setting. However there are those the define a moonbow as a nighttime rainbow. According to LearnReligions.com, it can be seen at Victoria Falls, a waterfall on the Zambezi



River in Southern Africa. They claim that "the lunar rainbow is best seen at times of high water (April to July) when there is sufficient spray to create the moonbow effect. This spectacle is best witnessed ... before the moon rises too high to create a moonbow that is visible to the ground-based observer."

I was able to determine this saying has roots with Indigenous people in the Americas, Hawaii, Pacific Islands and Philippines and it was also known among sailors. On the other hand, scientists call them 22-degree halos because the radius of the circle around the sun or moon is approximately 22-degrees.

Yet another saying I stumbled across is "A ring around the moon means rain within three days." It is also said that the number of stars inside the halo specifies the number of days until the rain begins. Still another saying is "Halo around the sun or moon, rain or snow soon." This weather proverb confirms that they also occur around the sun and are caused by the same ice particles in the high clouds. ♦



NASA Night Sky Notes

Spot the Morning and Evening Star: Observe Venus

By David Prosper

Venus is usually the brightest planet in our skies and is called “Earth’s Twin” due to its similar size to Earth and its rocky composition. However, Venus is a nightmare version of our planet, featuring a thick, crushing atmosphere of acidic clouds, greenhouse gasses, howling winds and intense heat at its surface.

This rocky inner world’s orbit brings it closer to Earth than any of the other planets and is the second closest to the Sun after Mercury. Like Mercury, Venus orbits between our planet and the Sun, so Earth-based observers can observe Venus in the morning before sunrise, or in the evening after sunset – but never high in the sky in the middle of the evening, unlike the outer planets. Since Venus is so striking in its twilight appearances, the planet features heavily in sky mythologies worldwide. Venus’s bright morning and evening appearances are the origin for its dual nicknames: the Morning Star and the Evening Star. Some ancient astronomers never made the connection and assumed the Evening Star and Morning Star were two unrelated objects! Observers can even spot Venus during the daytime if the sky is very clear and the planet is bright enough. Venus also has phases, similar to the Moon and Mercury. Galileo’s observations of Venus’s phases helped turn the astronomy world upside down in the early 1600s, and you can see them yourself using a telescope or even a surprisingly low-power pair of binoculars. Warning: Please be very careful when observing Venus with a

telescope in the early morning or daytime. Never allow the Sun to enter your instrument’s field of view, as you could be permanently blinded.

Venus’s other moniker of “Earth’s Twin” is a bit misleading. In terms of their surface temperatures and atmospheres, Venus and Earth are extremely different! The surface of Venus is warmer than that of Mercury, despite Mercury being many millions of miles closer to the Sun. While Mercury is still a scorching 800 degrees Fahrenheit, Venus is even hotter: 900 degrees Fahrenheit. The vast amount of carbon dioxide in the thick Venusian atmosphere acts as an insulating blanket that retains much of the Sun’s heat, creating the runaway greenhouse effect that dominates its present-day climate. The Venusian surface is a crushing 90 Earth atmospheres on top of its absurd temperatures. These extreme conditions mean that the mission life of any past Venusian robotic landers were measured in hours at best – and usually minutes! However, conditions in Venus’s upper atmosphere may be much more hospitable, with temperatures and pressures at 30 miles above the surface that are much more Earth-like in temperature and pressure. Studies of the Venusian atmosphere, including seasonal appearances of dark streaks and faint signals of suggestive chemistry, intrigue researchers with the possibility that some sort of life may persist in its clouds. But far more evidence is needed to

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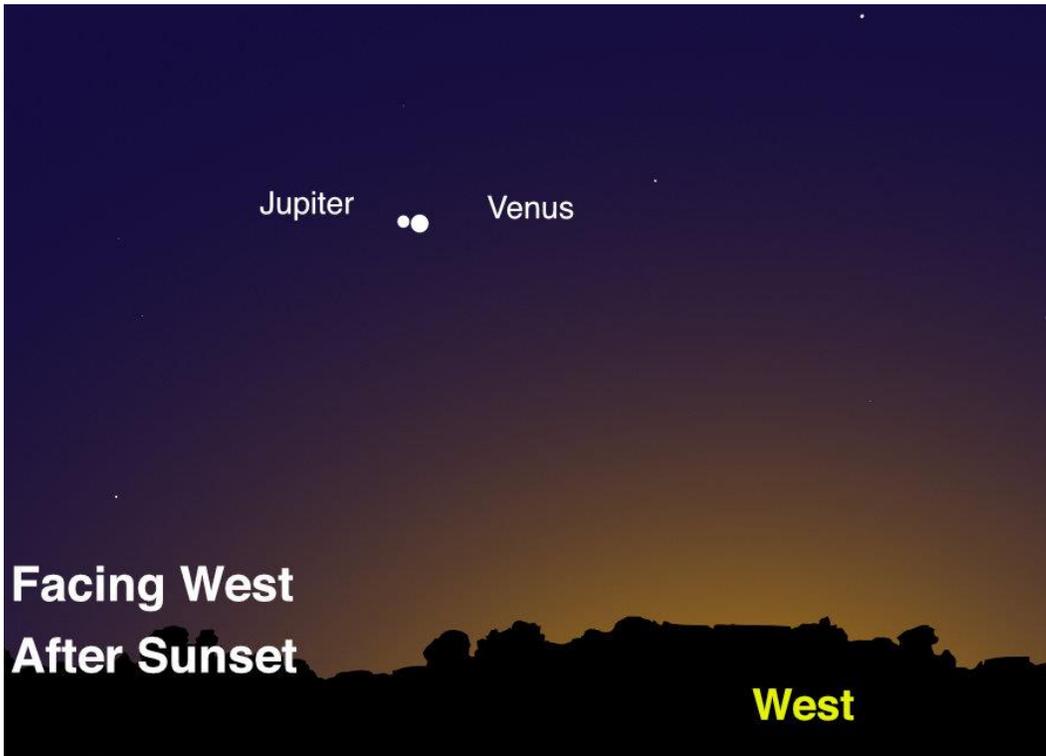
NASA Night Sky Notes

Spot the Morning & Evening Star: Observe Venus (cont'd)

confirm such a claim since non-biological factors like volcanism and other processes could also be the source for these signals.

Venus's thick sulfuric acid clouds block direct visual observations of its surface from optical telescopes on Earth. Multiwavelength observations from space probes show evidence of active volcanoes and possibly some sort of plate tectonics but follow up missions will be needed to confirm the presence of active volcanism, plate tectonics, and any possible signs of life. In order to do so, NASA is sending two new

missions to Venus by the end of this decade: the orbiter VERITAS, which will map the surface in high detail and study the chemistry of its rocks and volcanoes, and DAVINCI+, which will study its atmosphere and possible tectonic surface features via a "descent sphere" that will plunge into Venus's clouds. Follow their development and discover more about Venus at solarsystem.nasa.gov/venus, and of course, continue your exploration of the universe at nasa.gov. ♦



Jupiter will continue its descent towards the horizon while Venus will continue to climb and will be visible in the evenings through midsummer of 2023. It's a great year for Venus fans! *Image created with assistance from Stellarium.*

Directions to SMCAS Public Star Parties (Weather Permitting)

From Hwy 101 or El Camino: Take Brittan Avenue in San Carlos, west (toward 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 small blue sign on the right, and the entry road on the left.

From Hastings and Club Drives: From Belmont, take Carlmont Drive to Hastings Drive. Follow Hastings about 1.5 miles, first uphill, then down, to San Carlos where it becomes Witheridge Road, then ends a block later at Club Drive. Turn right and climb Club Drive to Crestview Drive. Turn left and continue some 2 miles, first up, then down past Leslie Drive, to the small blue

Crestview Park sign on the left. Turn right into the Crestview Park entry road.

From San Carlos, take San Carlos Avenue to Club Drive, and climb to the 5-way intersection. Take the half-right to continue on Club Drive past Witheridge Road to Crestview Drive. Proceed as above to Crestview Park.

Crestview Park - San Carlos

*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 flashlights 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.

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.**

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.**

Crestview Star Party schedule is here:

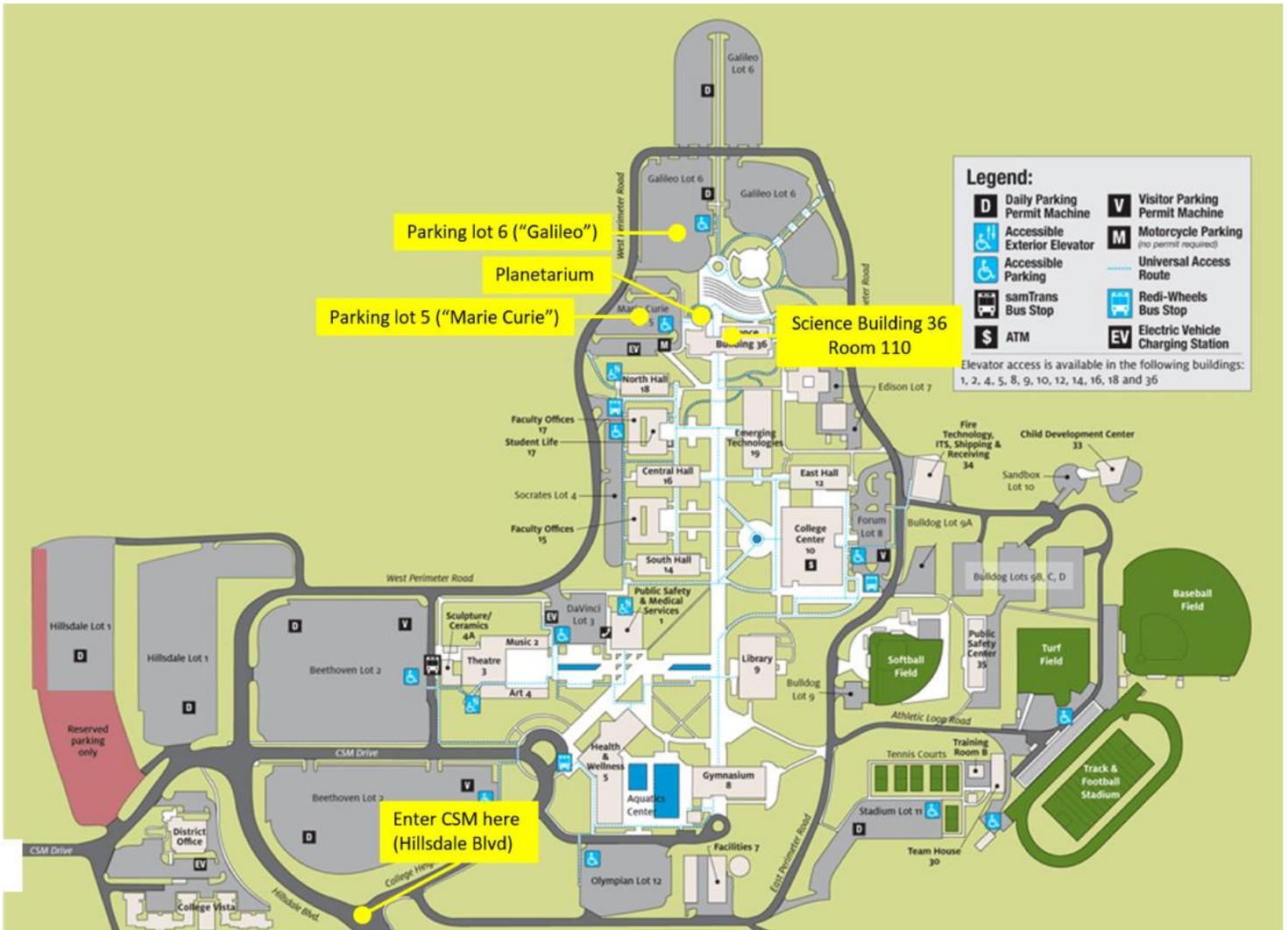
<http://www.smcasastro.com/crestview-park.html>



Directions to SMCAS Meetings at The College of San Mateo:

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 of Hillsdale Blvd. Continue straight onto West Perimeter Road and follow it until you reach Lot 5, "Marie Curie", or Lot 6, "Galileo." Science (ISC) Bldg. (36) and the Planetarium lie straight ahead. Enter Bldg. 36 either through the door facing the lot or walk around the dome to the courtyard entrance. We meet in ISC room, #110 for pizza and soft drinks one hour prior to the talk in the Planetarium (Pictured below.)





San Mateo County Astronomical Society Membership Application

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

rev 02272020

Become an SMCAS Member Today! Here's what you get:

- **Members Community**

Friendly advice and guidance from experienced recreational astronomers; access to SMCAS group emails, which provide general orientation information, announcements of astronomy events, file access and exchange.

- **SMCAS Events**

General meetings are held the first Friday of most months, at 7pm in the Integrated Science Center (ISC) Room and Planetarium in the Science Center (Bldg. 36) at the College of San Mateo (CSM), 1700 W. Hillsdale Blvd., San Mateo. Meetings include lectures and presentations on space science, an activity session, and refreshments (usually pizza).

We also offer stargazing two Saturdays a month, weather permitting. Visitors and those without telescopes are welcome; members are glad to share! SMCAS also has sponsored dark-sky campouts at Fremont Peak State Park, field trips to SLAC, KIPAC and Lick Observatory, plus **member-only events, including Star-B-Ques and quarterly potlucks.**

- **Subscriptions (free with your membership)**

The Event Horizon, SMCAS' newsletter, with SMCAS and member information, viewing tips and articles.

The Reflector, published quarterly by the Astronomical League, a national alliance of astronomy groups like SMCAS.

- **Significant Discounts on Equipment and Publications**

Discounts on purchases at Bay Area astronomical equipment retailer Orion Telescope Center, on sky calendars and ephemerides, and on such periodicals as *Sky & Telescope* and *Astronomy*.

- **Access to Loaner Equipment**

Use of SMCAS loaner telescopes and other astronomy equipment.

- **Sharing your Appreciation of Astronomy and Space Science with the General Public.**

Your SMCAS membership helps bring astronomy to interested lay people, especially students and children

Annual Dues: (SMCAS is a tax-exempt non-profit 501(c)(3). Dues may be tax deductible; consult your tax advisor):

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

Every membership includes all members of your immediate family, (including your kids).

To join you can:

Send application (see reverse side), with payment, to: SMCAS, P.O. Box 974, Station A, San Mateo CA 94403.

- Bring the completed application and payment to a meeting or event and give it to any SMCAS officer.
- Go online at <http://www.smcasastro.com>, click on the Membership tab and pay via PayPal.

Membership Application on next page



San Mateo County Astronomical Society Membership Application

rev 02272020

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' umbrella 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: _____