

Vandenberg Amateur Astronomical Society
presents
The Sidereal Times



Bubble nebula (see page 5)

Meeting News:

At the April meeting we discussed some general VAAS business and events we supported and had a presentation on Dark Skies by David Gibbs. (see page 4 & 5)

**Reminder: VAAS club meeting Friday May 10th
Manzanita school teachers lounge 7:00 PM.**



Lunar Calendar:

New Moon 18th

Full Moon 4th

VAFB Tour April 2019



Presidents Message

Hello, Fellow Skywatchers,

What a wonderful turn-out for our March meeting! Twenty attended and we gained a new member. Welcome to the Society, Richard Ripley! David Gibbs gave us a heart-felt and informative appeal for thinking about the lighting that surrounds us outside at night and finding ways to mitigate the glow. The documentary he shared, "Saving the Dark," should be seen by all people.

David's program brought us out-of-town guests, Nancy Emerson and her husband and Steve Williams and his wife. Nancy has long led the fight for IDA lighting in the Santa Ynez Valley, knowing how much they have to lose there. Steve is with CCAS and a great guy for reaching out to others in sharing his love of astronomy. We were honored by the presence of these very special guests.

Thank you, Louise Gray, for again bringing food and drinks to the meeting! Louise has expressed concern for those unable to grab a meal before the drive out to Manzanita and her caring is appreciated. Thank you for making us ask of ourselves: "What can I do from my talents and resources to boost VAAS."

Victor Jordan and his monthly publication, "The Lompoc Vision" has brought us two new members recently. Reach out to him. Pick up a copy around Lompoc: at the Library, Southside Coffee, Lompoc history Museum, Lompoc Chamber. Drop Victor an email [victor@thelompocvision.com] to let him know you appreciate his support of VAAS [he creates "spots" for us whenever we have any form of special programming, because he knows we are doing a great thing for our area.]

Jana, Vice President and Treasurer, will present our program at the May meeting. She will lead a discussion of famous observatories around the country and beyond: Lowell and Kitt Peak, for instance, and the new James Webb orbital telescope.

We have several outreach opportunities before us and we will delineate all of those at the meeting. This is a most important function of VAAS and your support is needed and encouraged.

Lastly: what a great time we had at the VAFB Museum [officially named: Space and Missile Heritage Center]! Eight members were able to make the trip.

Jennifer Green-Lanchoney was the perfect hostess on the ride to and from SLC 10 and Jay Prichard, the museum curator, did a fabulous job of relating the history of the space program at VAFB; he honored the unsung, heroic nature of all who have worked there and the benefits we enjoy as a result. This quarterly trip is highly recommended for all. See you at our May meeting!

Skyward

Tom

Events

May 4th *Star Party at Figueroa Mt. and / or Observatory.*



May 6 and 7th Eta Aquarids Meteor shower is an above average shower capable of producing up to 60 meteors per hour at its peak. Most of the activity is seen in the Southern hemisphere. In the Northern hemisphere the rate can reach 30 meteors per hour. It is produced by dust particles left behind by comet Halley. It peaks this year on the night of the 6th and morning of the 7th. Meteors will radiate from the constellation of Aquarius but can appear anywhere in the sky.

May 11th *Star Party at the Observatory.*



May 18th Full Moon, Blue Moon this phase occurs at 21:11 UTC. This full moon was known by early native American tribes as the full flower Moon because this was the time of year when Spring flowers appeared in abundance. It has also been known as the Full Corn Moon and the milk Moon. Since this is the 3rd of 4 full Moons in this season it is known as a Blue Moon.

May 25th *Star Party at the Observatory.*



Solar Day Event



Star party's and Events

April 6th Star Party @ observatory, cancelled due to weather.



April 13th Star Party @ the Observatory. Vince, Danny and a visitor Bob Wallace from Solvang on site. The sky was intermittently clear with some low level fog. We were able to view Mars and the moon and several Messier objects. Faint clouds dimmed the seeing at times. Secured and departed at 11:00 Pm. A fair night under the stars.



April 27th Star Party at Observatory. No input @ this time.

Solar Day Event



Winery Event



May 2019 Moon



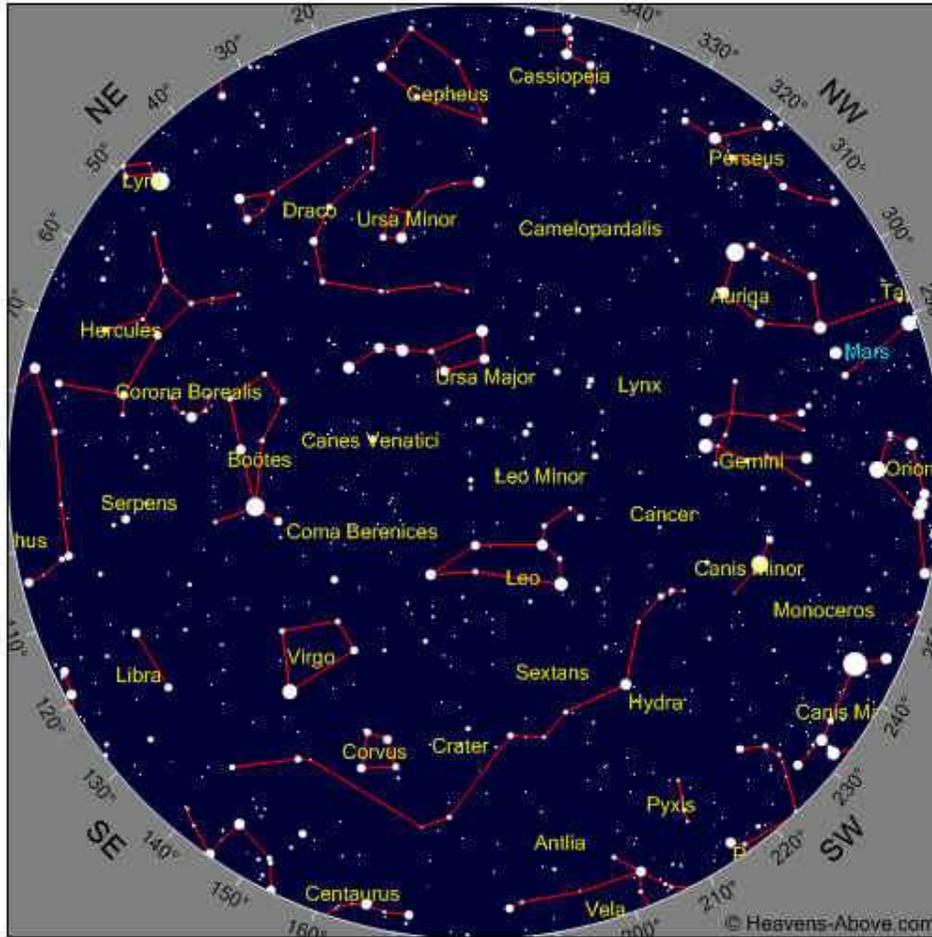
Full 18th, New 4th, Last Quarter 26th, First Quarter 12th.

Moon Facts and Folklore

A 1621 guide to healthy living offers the following advice. "When thou goest to bed...draw close the curtains to shut out the Moone-light, which is very offensive and hurtfull to the braine, especially to those that sleepe." Those careless enough to sleep under a full Moon risked insanity, blindness, or even being turned into a Werewolf. (but only if happened on a Friday night).

May 2019 Sky

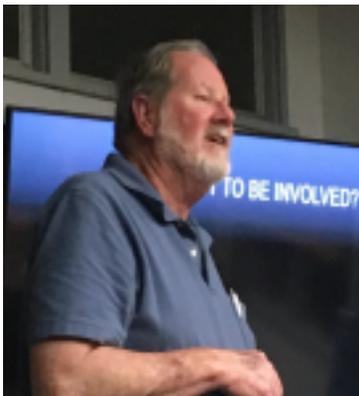
Some Objects of interest, M13, Alcor/Mizar



Time

Year	2019	Month	5	Day	5	Hour	21	Minute	21
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David Gibbs Dark Sky presenter



Dark Sky Night



Photo Courtesy Gary Satterfield



The Bubble nebula NGC 7535 located in the constellation of Cassiopeia is 11,000 light years distant. The bubble was formed by gasses being compressed by strong stellar wind from massive star BD+602522 40 times as massive as our Sun and thousands of times more luminous. As moving gas escapes the star it compresses surrounding gasses into a shell. The shell consists of hydrogen, oxygen and sulphur and is ionized by the radiation from BD+602522 causing it to glow. The bubble is approximately 6 light years in diameter. BD+602522 is a Wolf-Rayet star in the end stages of its life. It emits fierce stellar winds in the order of 1500 kilometers per second. The surface temperatures are approximately 30,000 to 60,000 degrees Kelvin. The image was captured using an AT8RC, a Canon 500D (modified) DSLR and a hyper tuned CGEM mount guided, 21 Frames @ ISO 800/7 minutes and 33 frames at ISO 1600. Darks, flats and bias calibration frames were also included in image processing using Images Plus 4.0 and CS2.

Dark Sky Night



For What its Worth

Binary Stars

More than four-fifths of the single points of light we observe in the night sky are actually two or more stars orbiting together. Most common of the multiple star systems are binary stars, systems of only two stars together. These pairs come in an array of configurations and could have impacts on the development of life.

Binary classifications: Binary stars are two stars orbiting a common center of mass. The brighter star is officially classified as the primary star, while the dimmer of the two is the secondary. Binary pairs can be classified based on their orbit. Wide binaries are the stars that have orbits that keep them spread apart from one another. These stars evolve separately with very little impact from their companions. They may have once contained a third star which booted the distant companion outward while eventually having been ejected themselves.

Close Binaries: evolve nearby able to transfer their mass from one to the other. The primaries of some close binaries consume the material from their companion sometimes exerting a gravitational force strong enough to pull the smaller star in completely. The pairs can also be classified based on how they are observed, a system that has overlapping categories.

Visual binaries: are two stars with wide enough separation that both can be viewed through a telescope or even a pair of binoculars. Five to ten percent of visible stars are visual binaries.

Spectroscopic Binaries: appear close even when viewed through a telescope. The wavelengths of the light the stars emit are measured to determine their binary nature.

Eclipsing Binaries: are two stars whose orbits are at an angle so that from Earth one passes in front of the other causing an eclipse. This feature is based on line of sight rather than any particular feature of the pair.

Astrometric Binaries: are stars that seem to dance around an empty space, that is, their companions cannot be identified but only inferred. Such a companion may be too dim to be seen or could be hidden in the glare of the primary star.

Stars travel around the galaxy and sometimes a massive star captures a passing one creating a new binary star, but this is a rare event. More commonly the envelope of gas and dust collapses on itself to form a star, splits and forms two or more stars instead. These stars evolve together but not necessarily identically. How a pair of stars evolve depends on their distance from each other. Wide binaries have very little effect on each other and so they often evolve much like single stars. Close binaries however, impact each others evolution with mass transfers changing the composition of the stars. If one star in a close binary explodes in a supernova or sheds its outer layers and forms a pulsar, often the companion is destroyed. If it survives it continues to orbit the newly formed body perhaps passing on more of its material. A binary star system provides the best means for scientists to determine the mass of a star. As the pair pulls on each other astronomers can calculate the size and from there determine characteristics such as temperature and radius. These factors help characterize single main sequence stars in the universe.

Stars in multiple systems can have a direct impact on life. A host of planets have already been found orbiting multiple stars. The orbit of these stars can affect the evolution of life which needs a relatively stable system to develop in. Though binary and multiple systems appear initially daunting, given that one or more stars are moving closer and farther from the planets and changing the amount of light and heat and radiation they receive, systems such as wide binaries or close binaries could actually produce conditions where life could eventually evolve. While binary systems certainly have a habitable zone where liquid water could potentially exist on the surface of a planet life might find it difficult to gain a foothold. Orbiting two stars at once makes life very elliptical occasionally bringing the planet out of the zone. Life does not take too kindly to frequently freezing over. Orbiting just one star in a binary system? Well sometimes you'll have two stars in your sky at once which can be a bit toasty. Sometimes you will have a star on each face of the planet ruining the night, and don't forget the double doses of UV radiation and solar flares. With that kind of instability, erraticism and irradiation it is hard to imagine complex life evolving with the kind of regularity it needs.

Club Officers



President
Tom Gerald

Vice president
& Treasurer
Jana Hunking



News Letter Editor
Vahan Yeterian

*“Astronomy compels the soul to look upward,
and leads us from this world to another”.*
(Plato)

*When I trace at my pleasure the windings to and fro of
heavenly bodies, I no longer touch Earth with my feet. I
stand in the presence of Zeus himself and take my fill of
ambrosia.*

(Ptolemy)



Club Meeting

Reminder Club meeting May 10th 7:00Pm
Manzanita School Teachers lounge.

Star Parties (as always weather permitting)

Other Astronomy Club Meetings

Central Coast Astronomical Society

Link to web site...

<http://www.centralcoastastronomy.org/>

Santa Barbara Astronomical Unit

Link to web site...

[http:// www.sbau.org/#AU_EVENTS_Calendar](http://www.sbau.org/#AU_EVENTS_Calendar)

Night Time Bright Objects (no scope required)

Link to “Heavens Above” web site

[http:// www.heavens-above.com/](http://www.heavens-above.com/)

(Iridium Satellite)

(ISS Visible Pass)

Be sure to set the nearest location from their
pull-down menu.

The web site link below will take you to some
Great Milky Way interactive images and how
It was developed. (Type it in the search box.)

<http://skysurvey.org/>

Dave McNally is the VAAS Web Site Serf/Minion

Dave

