

Vandenberg Amateur Astronomical Society
presents
The Sidereal Times



Great Orion Nebula (see page 5)

Meeting News:

At the June meeting we discussed events during the summer Break. Watched a video about astronomy and had welcomed 2 new members to the VAAS Bonnie and Danny. Wished Andy Wallace and his family good luck and a happy life at their new duty station in Florida.

Reminder: VAAS club meeting September 14th at Manzanita School Teachers Lounge 7:00 pm.



Lunar Calendar

New Moon 9th
Full Moon 25th



Presidents Message

Hello, All:

WELCOME BACK! After a summer of maddening, fog-laden nights across our summer break, I am looking forward to our September meeting. We can freely gripe together about our weather miseries here in the Lompoc Valley. However, I will say that Vince, Vahan, and I were cloud-free long enough on August 10th to share planets up-close with the YMCA campers [details follow]. The evening was a lot of fun, especially watching Vahan hold many in rapt attention with a laptop gallery full of his stunning photos.

June kicked off for me with two presentations after Sunday services at Saint Mary's Church, and a breakfast talk with the Vandenberg Village Lions Club the next week. Each talk was different from the one before, but all had lively discussions and plenty of questions about VAAS.

July brought me the mixed blessings of seeing the Wallace family leave us, literally as they departed on their cross-country ramble to their new home in Florida. I met them at the VAFB gate and gave them the farewell card we had all signed along with a little token of remembrance. I then watched as they all piled back into their packed family van, then made the turn east onto Highway 135, off on the first leg of their journey. Okay... yes, I got a catch in my throat.

Change is in the air! First order of business at our Meeting on the 14th will be: is the summer break we have traditionally taken necessary? Should the club begin holding regular meetings in July and August? Give this some consideration and be prepared to share your thoughts.

Looking forward to seeing all of you in the Teachers' Lounge, Manzanita School, at 7:00 PM sharp!

Skyward,
Tom

Events

Sept 1st *Star Party at the Observatory.*

😊 Yea!

Sept 7th Neptune at opposition, the blue giant planet will be at its closest approach to Earth. It will be brighter than any other time of the year and be visible all night long. This is the best time to view and or photograph Neptune. Its extreme distance will only show a blue dot in any but the largest and most powerful telescopes.

Sept 8th *Star party at Figueroa Mountain and /or Observatory.*

😊 Yea!

Sept 15th *Star party at the Observatory.*

😊 Yea!

Sept 23rd September Equinox, the September equinox occurs at 01:54 UTC. The Sun will shine directly on the equator and there will be nearly equal amounts of day and night throughout the world. This is the first day of Fall (Autumnal equinox) in the northern hemisphere and the first day of Spring (Vernal equinox) in the Southern hemisphere



Star party's and Events

June 9th Star Party at the Observatory, cancelled due to weather.



Nuts!

June 16th Star Party at Figueroa and/or Observatory cancelled due to weather.



Nuts!

June 23rd Star Party at the Observatory cancelled due to weather.



Nuts!

July 7th Star Party at the Observatory. Vince Dave and Vahan on site. No clouds but some smoke and haze in the air. Did a complete sky model, 3 stars each side of the meridian. Most objects are in the field of view of the 14 inch scope. Looked at Jupiter, Saturn, M57 and M13. Even with all the haze and goo in the air M13 really looks good in the big scope. It was a good night under the stars.



😊 Yea!

July 14th Star Party at Figueroa Mt and / or the Observatory. No one at Figueroa Mt. The Observatory cancelled due to weather again.



Nuts!

July 21st Star Party at the Observatory. Cancelled due to weather.



Nuts!

August 4th Star Party at the Observatory. Although the weather was good no one showed up for the star party??



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August 10th Tom, Vince and Vahan supported the YMCA camp out at river Park. Tom and Vince set up their SCT's and Vahan showed astro photos with his Lap Top. Lots of kids and parents viewed Venus, Jupiter and Mars and there was always a crowd around the Lap Top. It was a fun time for all.



😊 Yes!

August 11th Star Party at Figueroa Mt and / or the Observatory. As before the weather was not cooperating plus several members were on holiday or had other commitments.



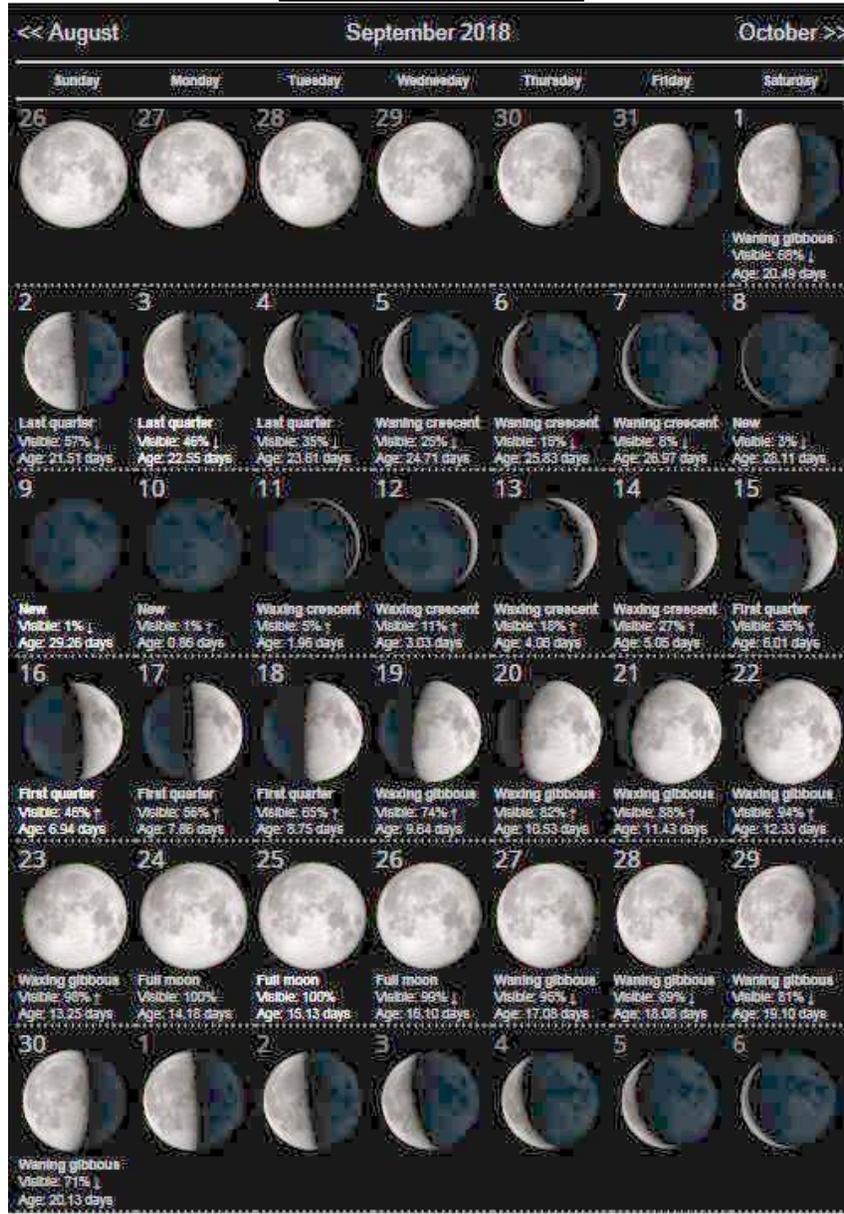
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August 18th Star Party at the Observatory. Dave and Vahan on site at 8Pm and opened the observatory. Found the remains of a mouse and cleaned up the flooring. The weather moved in and totally obscured the sky. Called Vince and told him not to bother coming in. Secured and departed about 8:30 Pm.



Nuts!

September 2018 Moon



Full 25th, New 9th, Last Quarter 3rd, First Quarter 16th.

Moon Folklore & Facts

The Moon is the fifth largest natural satellite in the Solar System.

At 3,475 km in diameter, the Moon is much smaller than the major moons of Jupiter and Saturn. Earth is about 80 times the volume than the Moon, but both are about the same age. A prevailing theory is that the Moon was once part of the Earth, and was formed from a chunk that broke away due to a huge object colliding with Earth when it was relatively young.

Photo Courtesy Vahan Yeterian



Messier 42 (M42), the famous Orion Nebula, is an emission-reflection nebula located in the constellation Orion the Hunter. With an apparent magnitude of 4.0, the Orion Nebula is one of the brightest nebulae in the sky and is visible to the naked eye. It lies at a distance of 1,344 light years from Earth and is the nearest stellar nursery to Earth. The nebula has the designation NGC 1976 in the New General Catalogue. Messier 42 occupies an area of 65 by 60 arc minutes of apparent sky and its spatial diameter measures 24 light years. The nebula has a mass 2,000 times that of the Sun and contains associations of stars, reflection nebulae, neutral clouds of dust and gas, and ionized gas. It is part of the Orion Molecular Cloud Complex, a larger region of nebulosity that also includes the famous Horse head the Flame, and the emission nebula Barnard's Loop. The Orion Molecular Cloud Complex covers an area of more than 10 degrees, which is more than half of the Orion constellation. The Orion Nebula is a place of massive star formation and one of the most studied deep sky objects in our vicinity as it allows astronomers to study the process of stars forming from clouds of dust and gas and the photo-ionizing effects of massive young stars that are responsible for the nebula's glow. New stars are forming throughout the nebula. The temperature in the central region is up to 10,000 K and considerably lower around the edges. The stars in the Trapezium Cluster emit ultraviolet radiation, heating the surrounding gas and illuminating the nebula. Their stellar winds are also eroding and sculpting the nebula. Most of the ultraviolet ionizing radiation comes from Theta-1 Orionis C, the most massive of the four bright stars in the Trapezium Cluster and one of the most luminous stars known. Theta-1 Orionis C has the spectral classification O6peV and the highest surface temperature (40,000 K) of any star visible to the naked eye. It emits 3 to 4 times more photo ionizing light than the second brightest star in the cluster, Theta-1 Orionis. Messier 42 contains hundreds of very young stars, less than a million years old, and also proto stars still embedded in dense gas cocoons. The nebula is home to about 700 stars in different stages of formation. The youngest and brightest members are believed to be less than 300,000 years old, and the brightest of these may be as young as 10,000 years old. The Hubble Space Telescope has observed more than 150 protoplanetary disks, or proplyds, within M42. These are systems in the first stages of solar system formation. In about 100,000 years, most of the nebula will be gone and leave behind a bright, young open cluster of stars surrounded by wispy remains of the former nebulosity, similar to the Pleiades. Image capture, Astro-Tech AT80EDT f/6 ED refractor, Canon T3i Rebel /Baader modified, integration time .5 hours ISO 800, Celestron AVX mount. Software DSS 3.3.4.

For What its Worth

When Galaxies collide: Our own Milky Way is on a collision course with Andromeda, the closest spiral galaxy to our own. At some point during the next few billion years, our galaxy and Andromeda – which also happen to be the two largest galaxies in the Local Group – are going to come together with catastrophic consequences. Stars will be thrown out of the galaxy, others will be destroyed as they crash into merging super massive black holes. And the delicate spiral structure of both galaxies will be destroyed as they become a single giant elliptical galaxy. But as cataclysmic as this sounds this sort of process is actually a natural part of galactic evolution. Astronomers have known about this impending collision for some time. This is based on the direction and speed of our galaxy and Andromeda. But more importantly when astronomers look out into the universe they see galaxy collisions happening on a regular basis.

Galaxies are held together by mutual gravity and orbit around a common center. Interactions between galaxies is quite common, especially between giant and satellite galaxies. This is often the result of galaxies drifting too close to one another, to the point where the gravity of the satellite galaxy will attract one of the giant galaxies primary spiral arms. In other cases the path of the satellite galaxy may cause it to intersect with the giant galaxy. Collisions may lead to mergers, assuming that neither galaxy has enough momentum to keep going after the collision has taken place. If one of the colliding galaxies is much larger than the other it will remain largely intact and retain its shape while the other smaller galaxy will be stripped apart and become party of the larger galaxy. Such collisions are relatively common and Andromeda is believed to have collided with at least one other galaxy in the past. Several dwarf galaxies such as the Sagittarius Dwarf Spheroidal galaxy are currently colliding with the Milky Way and merging with it. However, the word collision is a bit of a misnomer since the extremely tenuous distribution of matter in the galaxies means that actual collisions between stars or planets is extremely unlikely.

In 1929, Edwin Hubble revealed observational evidence which showed that distance galaxies were moving away from the Milky Way. This led him to create Hubble's Law, which states that a galaxy's distance and velocity can be determined by its red shift – i.e. a phenomena were an objects light is shifted toward the red end of the spectrum when it is moving away. However, spectrographic measurements performed on the light coming from Andromeda showed that its light was shifted towards the blue end of the spectrum (blue shift). This indicated that unlike most galaxies that have been observed since the early 20th century, Andromeda is moving toward us. In 2012 researchers determined that a collision between the Milky Way and the Andromeda galaxy was sure to happen based on Hubble data that tracked the motions of Andromeda from 2002 to 2010 based on measurements of its blue shift. It is estimated that Andromeda is approaching our galaxy at a rate of 110km/second (68mi/sec). At this rate it will likely collide with the Milky Way in about 4 billion years. These studies also suggest M33, the Triangulum Galaxy – third largest and brightest of the Local group – will participate in this event as well. In all likelihood it will end up in orbit around the Milky Way and Andromeda then will collide with the merger remnant at a later date.

In a galaxy collision, large galaxies absorb smaller galaxies entirely, tearing them apart and incorporating their stars. But when the galaxies are similar in size – like the Milky Way and Andromeda – the close encounter destroys the spiral structure entirely. The two groups of stars eventually become a giant elliptical galaxy with no discernible spiral structure. Such interactions can also trigger a small amount of star formation. When the galaxies collide, it causes vast clouds of hydrogen to collect and become compressed, which can trigger a series of gravitational collapses. A galaxy collision also causes a galaxy to age prematurely, since much of its gas is converted into stars. After this period of rampant star formation, galaxies run out of fuel. The youngest hottest stars detonate as supernovae, and all that's left are the older, cooler red stars with much longer lives. This is why giant elliptical galaxies, the results of galaxy collisions, have so many old red stars and very little active star formation.

Despite the Andromeda Galaxy containing about 1 trillion stars and the Milky Way containing about 300 billion, the chance of even two stars colliding is negligible because of the huge distances between them. However, both galaxies contain central super massive black holes, which will converge near the center of the newly-formed galaxy. This black hole merger will cause orbital energy to be transferred to stars, which will be moved to higher orbits over the course of millions of years. When the two black holes come within a light year of one another, they will emit gravitational waves that will radiate further orbital energy, until they merge completely. Gas taken up by the combined black hole could create a luminous quasar or an active nucleus to form at the center of the galaxy. And last, the effects of a black hole merger could also kick stars out of the larger galaxy, resulting in hypervelocity rogue stars that could even carry their planets with them. Today, it is understood that galactic collisions are a common feature in our universe. Astronomy now frequently simulate them on computers, which realistically simulate the physics involved – including gravitational forces, gas dissipation phenomena, star formation, and feedback.



Club Officers



President
Tom Gerald



Vice President
Jana Hunking



Treasurer
Andy Wallace



News Letter Editor
Vahan Yeterian

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



Club Meeting

Reminder Club meeting Sept 14th at 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/>

VAAS.

Dave McNally is the VAAS Web Site Serf/Minion

Dave

