VAAS Website: www.vaas.universeii.com/ July 2, 2019

Vandenberg Amateur Astronomical Society presents The Sidereal Times

Rosette Nebula (see page 5)

Meeting *News:*

At the June meeting we discussed past events and what events we might be supporting in the coming months.

Reminder: VAAS club meeting July 12th 7:00 pm Manzanita School Teachers Lounge.

Lunar Calendar

New Moon 2nd

Full Moon 16th

Mauna Kea Observatory Hawaii (ha,ha)

Presidents Message

Hello, Fellow Fog Haters,

Hopefully, by the time we are reading this issue of Sidereal Times, the "June Gloom" will have left us. Mother Nature, give us a break! I actually saw depression on everyone's faces at the meeting when I brought up star parties.

However, we actually had a very upbeat and productive meeting! With fifteen of our little band attending, we filled the Teachers Lounge. Great to see Ken and Louise Spraker join us; our Ken has had a rough go of it and it was a joy to see them come through the door.

Put it on your calendars: VAAS will be on hand for the Lompoc Old Town Market on Friday, July 26th, on South H Street between Ocean and Cypress. Bring your solar-safe telescope if you have one. Last year we found that people were amazed to be able to look at the sun safely. Details for setting up will be discussed at our July 12th meeting.

Thank you all for your enthusiastic vote for returning to Thompson Park for our picnic in October. At the meeting, Vahan shared the new table covers we will be using. Filled with stars, they are perfect for a bunch of astronomers! Thank you, Carla, for finding these cloths for us, and Vahan for securing them.

Thank you, Jana, for your detailed information about the James Webb Space Telescope! Your program was the perfect follow-up to your earlier discussion of famous ground-based observatories. Vince's sharing about his recent visit to the Lick Observatory was a lovely addition to the discussion.

Louise Gray and Jana brought goodies that added a special accent to the fun we had. Thank you, Louise, for you continued care of appetites.

Vahan and I got together around the Meade DS 10 donated to VAAS by Dr. Gil Andersen, and gave it a good cleaning. We removed the 10-inch mirror, giving it a restorative bath. Vahan then collimated the unit after some extensive tweaking of both primary and secondary mirrors. A test look at hilltop trees a mile away assured us that the optics are quite good and that the unit should be a nice addition to our star parties.

I look forward to being with all of you at our July meeting on the 12th. Think about where you were on July 20, 1969, and bring your memories to the meeting.

Skyward,

Tom

Events

July 2nd Total Solar eclipse the path will only be visible in parts of the southern pacific ocean and central Chile and central Argentina. A partial eclipse will be visible in most parts of the southern Pacific ocean and western south America.

July 6th Star Party at the Observatory, and / or Figueroa Mt.

Yea!

July 9th Saturn at opposition, it will be at its closest approach to Earth and will be brighter than any other time of the year. It will be visible all night long. This is the best time to observe and photograph Saturn and some of its moons.

July 13th ***Star Party at the Observatory***.

Yea!

July 16th Partial Lunar eclipse will be visible throughout most of Europe, Africa, central Asia and the Indian Ocean.

July 27th ***Star party at the Observatory.***

Yea!

July 28th & 29th Delta Aquarids Meteor shower is an average shower that can produce up to 20 meteors per hour at its peak. It is produced by debris left behind by comet Marsden and Krachi. It peaks this year on the evening of the 28th and morning of the 29th. Meteors will radiate from the constellation of Aquarius but can appear anywhere in the sky.

VAAS Figueroa Mt. Site 1.5

Star party's and Events

June 1st Star Party at the Observatory and / or Figueroa Mt. Cancelled due to weather.

Nuts!

June 8th Star Party at the Observatory. Dave, Tom, Danny and Vahan on site 7:00 Pm. Found 1 dead mouse, collected all the traps and prepared them for re-baiting. Cleaned up a bit inside the site. Weather clear, light wind and a few flying bugs. Won't be dark until about 8:45 Pm. Joel and Candy showed up and set up his 10 inch Meade SCT. They viewed Jupiter Messier 13 and several other celestial objects. It was a good night under the stars. Departed about 11:30 Pm.

Yea!

June 29th Star Party at the Observatory. Dave, Tom, Vahan Joel and Candy on site. Weather slowly closing in. Tom set up the Donated DS10 scope to check out the optics. Joel set up his Meade 10 SCT. Vahan and Dave Looked at a few stars with the DS10 and verified the collimation was correct. Joel and Candy looked at a few stars but it became apparent that this star party was over, the sky overcast was complete. Checked the observatory and found one mouse caught in a trap, disposed of same. Secured the observatory and departed at 10:00.

Yea!

Solar Observing

July 2019 Moon

Full 16th, New 2nd , Last Quarter 25th, First Quarter 9th .

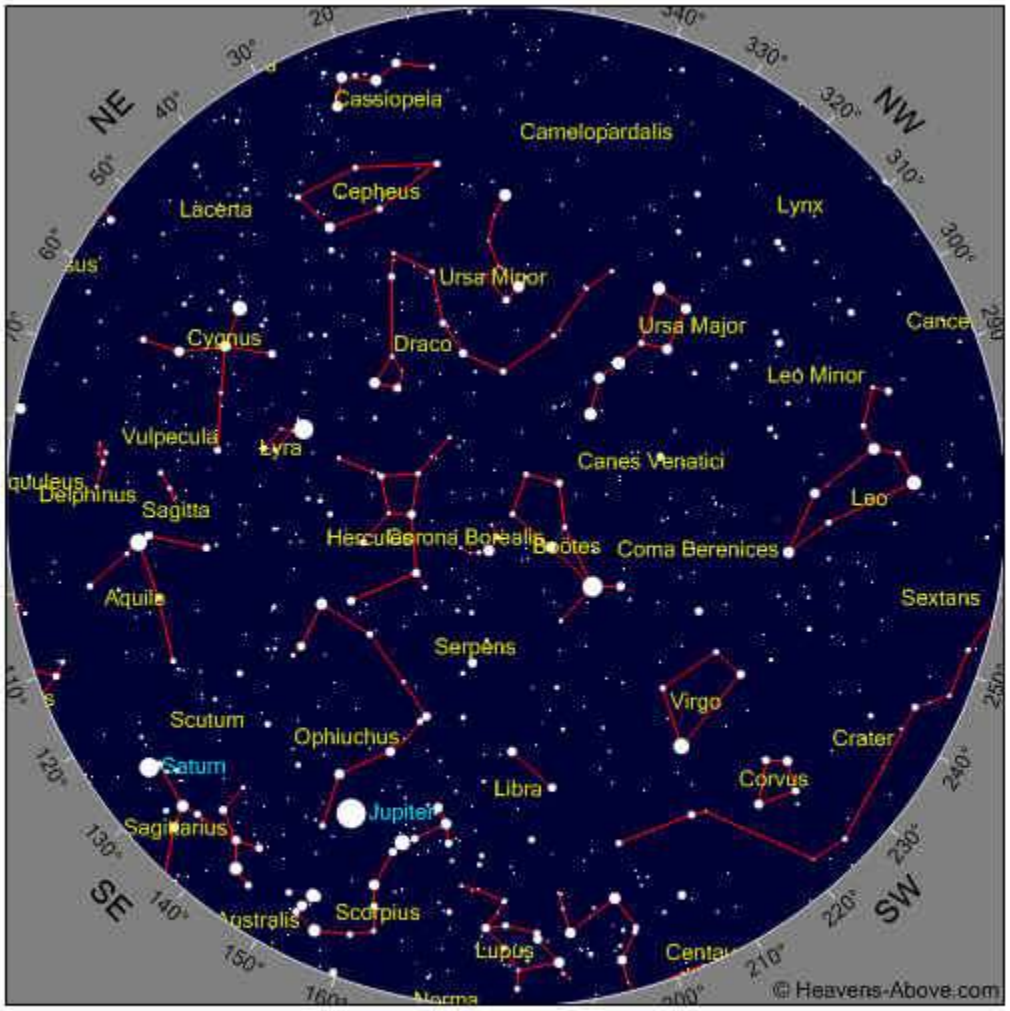
Moon Facts

The Lunar craters were formed by asteroids and comets that collided with the Moon. Roughly 300,000 craters wider than 1 Km (0.6 Miles) are thought to be on the Moons near side.

School Solar Outreach

July 2019 Sky

Some Objects of interest, M13, M57, M27, Jupiter



Time

Year 2019 Month 7 Day 2 Hour 21 Minute 39

Setup @ Star Party

At the Observatory

Courtesy of David McNally

The Rosette Nebula (also known as Caldwell 49) is a large spherical (circular in appearance) H ll region located near one end of a giant molecular cloud in the Monoceros region of the Milky Way galaxy. The open cluster 2244 (Caldwell 50) is closely associated with the nebulosity, the stars of the cluster having been formed from the nebula's matter. This complex has the following NGC Designations:

NGC 2237 - Part of the nebulous region (also used to denote the whole nebula).
NGC 2237 - Part of the nebulous region.
NGC 2239 - Part of the nebulous region discovered by Herschell.
NGC 2244 - The open cluster within the nebula discovered by Flamsteed.
NGC 2246 - Part of the nebulous region.

The cluster and nebula lie at a distance of 5000 light years from Earth and measure roughly 50 light years in diameter. The radiation from the young stars excites the atoms in the nebula causing them to emit radiation themselves producing the emission nebula we see. The mass of the nebula is estimated to be about 10,000 solar masses. A survey of the nebula with the Chandra X – ray observatory has revealed the presence numerous new born stars inside the optical Rosette Nebula and studded within a dense molecular cloud. Altogether approximately 2500 young stars lie in this star forming complex including the massive O-type stars HD 46223 and HD 46150 which are primarily responsible for blowing the ionized bubble. Most of the on-going star formation activity is occurring in the dense molecular cloud to the south east of the bubble. A diffuse X-ray glow is also seen between the stars in the bubble which has been attributed to super hot plasma with temperatures ranging from 1 to 10 million degrees Kelvin. This is significantly hotter than the 10,000 K plasmas seen in the H ll regions and is likely attributed to the shock-heated winds from the massive O-type stars.
Image Capture by Sigma 170 – 500 f/5.6 telephoto lens, Canon T3i Baader modified, Celestron hyper tuned CGEM mount. Integration time 0.7 hours frames 20 x 120", DSS software.

For What its Worth

Nebulae: what are they and where do they come from:

Named after the Latin word for cloud, nebulae are not only massive clouds of dust, hydrogen and helium gas and plasma, they are often Stellar Nurseries, a place where stars are born, their formation process, their role in stellar and planetary formation and diversity, they have provided us with intrigue and discovery. Outer space is not really a total vacuum. It is made up of gas and dust particles known collectively as Instellar Medium (ISM). Approximately 99% of the ISM is composed of gas, while 75% of its mass takes form of hydrogen and 25% as helium. Interstellar gas consists partly of neutral atoms and molecules as well as charged particles (plasma) such as ions and electrons. This gas is extremely dilute with an average density of about 1 atom per cubic centimeter. In contrast, Earth's atmosphere has a density of 30 quintillion molecules per cubic centimeter at sea level. Even though the interstellar gas is very dispersed, he amount of matter adds up over the vast distances between stars. Eventually and with enough gravitational attraction between clouds this matter can coalesce and collapse to form stars and planetary systems. In essence, a nebula is formed when portions of the ISM undergo gravitational collapse. Mutual gravitational attraction causes matter to clump together forming regions of greater and greater density. From this stars may form in the center of the collapsing material whose ultraviolet ionizing radiation causes the surrounding gas to become visible at optical wavelengths.

Stellar objects that can be called Nebula come in four major classes. Most fall into the category of Diffuse Nebulae which means they have no well defined boundaries. These can be sub divided into two further categories based on their behavior with visible light – Emission Nebulae and Reflection Nebulae. Emission Nebulae are those that emit spectral line radiation from ionized gas and are often called H ll regions because they are largely composed of ionized hydrogen. In contrast, Reflection nebulae do not emit significant amounts of visible light, but are still luminous because they reflect the light from nearby stars. There are also what is known as Dark Nebulae, opaque clouds that do not emit visible radiation and are not illuminated by stars but block light from luminous objects behind them. Much like reflection and emission nebulae, Dark Nebulae are sources of infra-Red emissions chiefly due to the presence of dust within them. Some nebulae are formed by super nova explosions and are hence classified as Supernova Remnant Nebulae. In this case short lived stars experience implosion in their cores and blow off their external layers. This explosion leaves behind a remnant in the form of a compact object – i.e. a neutron star and a cloud of gas and dust that is ionized by energy of the explosion.

Other nebulae may form as Planetary Nebulae which involves a low mass star entering the final stage of its life. In this scenario stars enter the Red Giant phase slowly loosing their outer layers due to helium flashes in their interior. When the star has lost enough material its temperature increases and the UV radiation it emits ionizes the surrounding material it has thrown off. During the Asymptotic Giant Branch (AGB) phase the star undergoes mass loss emitting a circumstellar shell of hydrogen gas. When this phase comes to an end the star enters the PPN phase where it is energized by a central star causing it to emit strong infrared radiation and become a reflection nebulae. The PPN phase continues until the central star reaches a temperature of 30,000 K after which it is hot enough to ionize the surrounding gas. This class contains the subclass known as Protoplanetary Nebulae (PPN) which applies to astronomical objects that are experiencing a short lived episode in a star's evolution. This is the rapid phase that takes place between the Late Asymptotic Giant Branch (LAGB) and the following planetary Nebula (PN) phase. Most nebula are vast in size measuring up to hundreds of light years in diameter. Although denser than the space surrounding them most nebulae are less dense than any vacuum created in an Earthen environment. In fact a nebular cloud that was similar in size to Earth, its mass would be only a few kilograms.

In short nebula are not just the starting points of stellar evolution but can also be the end point. And between all the star systems that fill our galaxy and our universe, nebulous clouds and masses are sure to be found, just waiting to give birth to the next generation of stars.

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 428 – 347 BC)

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.
(Ptolemy100 – 170 AD)

Club Meeting

Reminder Club meeting July 12th 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

Night Time Bright Objects (no scope required)

Link to "Heavens Above" web site
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