VAAS Website: www.vaas.universeii.com/ 2, May 2017

Vandenberg Amateur Astronomical Society presents The Sidereal Times

Rosette Nebula (see page 5)

Meeting *News:*

At the April meeting we discussed purchasing solar viewing Glasses and hosting a class from Manzanita school for a day of solar viewing at the observatory. We also exchanged some information about developments in Astronomy. Happy birthday Tom.

Reminder: VAAS club meeting May 12th 7:00 Pm Manzanita school Teachers lounge.

Lunar Calendar:

New Moon 25th
Full Moon 10th

Presidents Message

Here I sit at the keyboard, pondering this day; around 2:00 PM-- Central Time that is-- my body completed its 69th orbit of ol' Sol. That's a lot of hours in human terms, though hardly a blink in astronomical terms. That is what my becoming associated with you wonderful, curiosity-driven people has made so clear to me in a way I have never before appreciated: the immensity of what we talk about when we utter the word "universe." We stand out under the stars, shivering together, looking upward and you throw out distances between galaxies, the time it takes for light to cross the gap, that simply boggle the imagination! More than once I have come away from one of our gatherings and found myself stepping back from the forward plunge and pondering how essential it is to be truly alive to each moment that passes before us.

With that vein of thought in mind, I joined Vahan, Jana and Louise at our Observatory Thursday, April 20th for two hours of delightful conversation with a crowd of amazing third grade scholars from Manzanita Charter School. What an inspiring afternoon it proved to be: those young people were not only eager to listen to what we had to share, but were respectfully proud in sharing their own knowledge of the planets, sun, moon, stars and constellations.

The next day I visited Nichelle Roark's class, and saw the incredibly stimulating and rewarding environment she has built for and with them. Among her young scholars were some genuine, budding astronomers; the other scholars each had an awareness that will enrich their lives forever. What an honor for us, through our outreach, to be a part of nurturing that gift their teachers are giving them.

So, as I begin orbit number Number 70, I am reinvigorated and rededicated to letting no question go by without attempting to find an answer. And I thank each of you for inspiring and supporting the quest. You are all like Vahan: you see problems not as roadblocks but simply questions and you seek answers. He picks up his beloved cello after four years away from it and just works on making music pour once again from its strings. [Thank you for sharing your "other talent" with us, Vahan, in your surprise postlude to our last meeting.]

You, my fellow VAAS astronomers, like those children, have shown me there is so much to be gained by never giving up on seeking.

Thank you, VAAS. See you under the stars!

Tom

Events

May 6&7 Eta Aquarids Meteor shower is an above average shower capable of producing 30 meteors per hour in the Northern hemisphere. It is produced by dust particles left behind by Comet Halley. The shower runs annually April 19 to May 28 and 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 6th ***Star party at the observatory.***
Yea!

May 17th The planet Mercury reaches greatest Western elongation of 28.5 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the morning sky. Look for the planet low in the Eastern sky Just before Sunrise.

May 20th ***Star Party at the observatory.***
Yea!

May 27th ***Star party at the Figueroa Mountain site 1.5.***
Yea!

Solar day 20 April at Observatory

Star party's and Events

April 1st Star Party at the observatory. Craig fair and Vahan on site at 6:45 Pm. Craig set up his equipment to do some astrophotography. There were some high thin clouds forming and by 7:45 the sky was almost completely overcast. Did not look like it was going to clear so we packed it in for the night. Oh by the way the bugs were out in force but started thinning out by the time we departed.

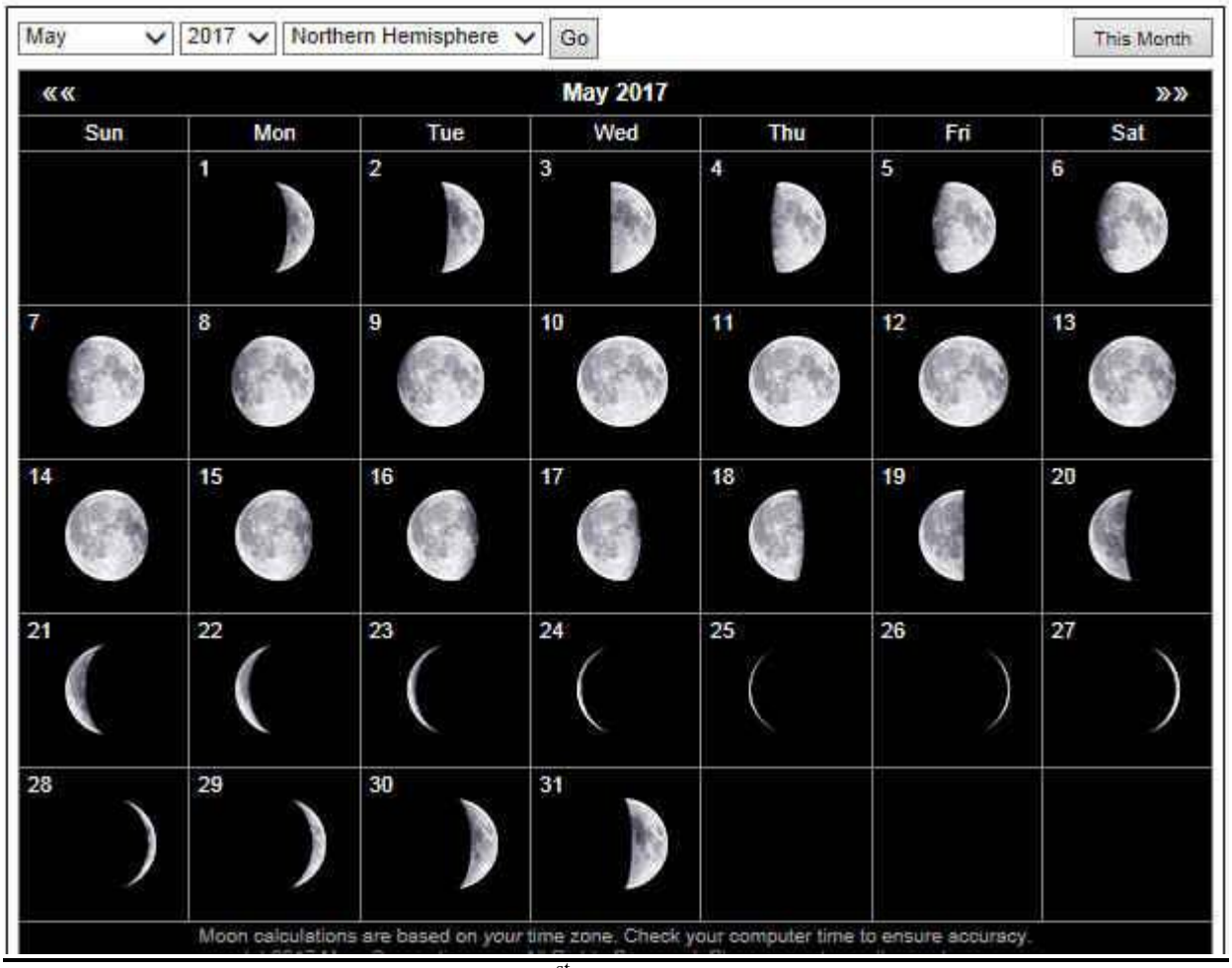
Nuts!

April 1st Vince attended the Los Flores ranch event representing VAAS. There were 2 from CCAS and 6 from SBAU clubs. Quite a few people attended the event. There were some high thin clouds to contend with. Objects viewed were the Moon, Orion Nebula, M81 and M82, Mars, Pleiades and the Leo triplet to name a few. It was a good event for all.
Wow!

April 20th Hosted Manzanita school classes for an afternoon of Solar viewing with the 14inch. There were about 50 kids accompanied by several parents and teachers in attendance. The sky was clear with a bit of wind. Only one small sunspot was visible. All in attendance got to see the sunspot with the 14 inch scope. Vahan ran the observatory, Louise Gray guided the children into the observatory, Jana gave a presentation about the Sun to each group and Tom helped with the presentation and displays. It was an all around good 3 hour event.
Wow!

April 22nd Star Party at the Observatory. Vahan on site, did some weed removal and vacuumed the observatory. Vince, Andy Wallace and family, Louise Gray and friend and a visitor Jeremy and son Adan on site. Weather was not too good, lots of clouds, but we did get to see Jupiter with the 14 inch scope. Vince had his 16 inch Dob set up and on Jupiter also. Lots of interaction among the folks. Had a good Star Party event. Secured and departed at 9:30 Pm.
Yea!

May 2017 Moon



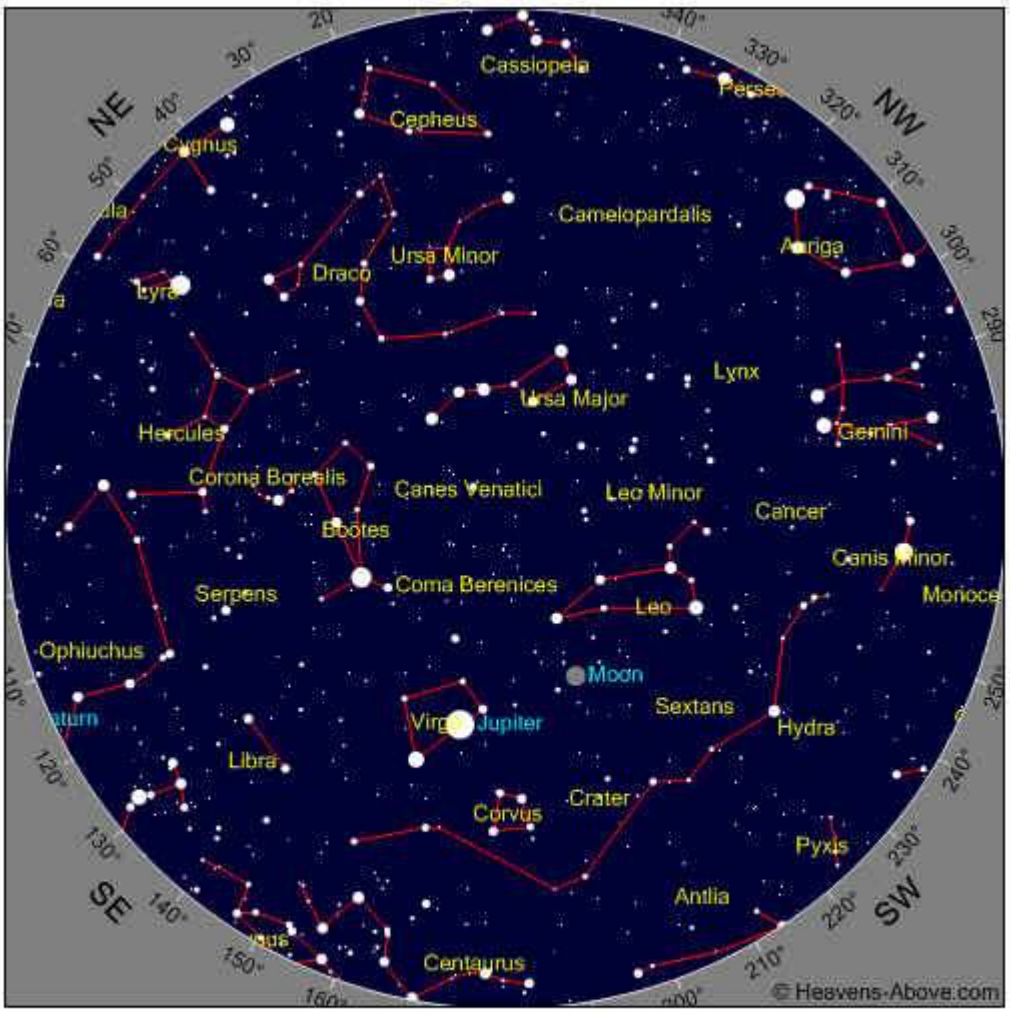
Full 10th, New 25th, 1st Quarter 3rd, Last Quarter 18th

Moon Facts

The footprints left by the Apollo astronauts will not erode as they would on earth since there is no wind or water on the Moon. The footprints should last at least 10 million years. probably far longer.
When the Apollo 12 astronauts landed on the moon, the impact caused the Moon's surface to vibrate for 55 minutes.
The diameter of the moon's largest crater is 144 miles.

May 2017 Sky

Some Objects of interest M13, M27, M92, M57, Jupiter



Time

Year	2017	Month	5	Day	5	Hour	22	Minute	31

Photo Courtesy Dave McNally

The Rosette Nebula (also known as Caldwell 49) is a large, spherical (circular in appearance), H II region located near one end of a giant molecular cloud in the Monoceros region of the Milky way Galaxy. The 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. The complex has the following NGC designations:

- NGC 2237 – Part of the nebulous region (Also used to denote whole nebula)
- NGC 2238 – 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 some 5,000 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 around 10,000 solar masses.A survey of the nebula with the Chandra X-ray Observatory has revealed the presence of numerous new-born stars inside 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 ongoing 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 a super-hot plasma with temperatures ranging from 1 to 10 million K. This is significantly hotter than the 10,000 K plasmas seen in H II 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 20x120”, DSS software

For what its Worth

As of February 2016, there are nearly 2,000 confirmed exoplanets, but you can always check for the most up-to-date numbers. This number changes constantly partly due to the fact that our current methods are constantly being improved. Here are the methods that have been used to at least attempt to detect extrasolar planets.

Direct Imaging: This seems the most obvious choice - seeing the planet itself. Unfortunately, this is very difficult because the planets are swamped by the light from their parent star. Trying to make out the light from an extrasolar planet amidst the light from its parent star is like trying to pick out the light from a firefly hovering next to a searchlight. Although this method has not detected as many planets as other methods, it's potential has increased dramatically over the past few years due to advancements in our technology.

Astrometry: The study of the precise positions of stars on the sky is called astrometry. We always think of a planet orbiting a star, but what is actually happening is the planet and the star are both orbiting a shared center of mass. The star is always much more massive than the planet, so the center of mass is much closer to the star, and thus the star's orbit is very tiny while the planet's orbit is much more pronounced. Even though the change in the star's position is very small due to the tug of the planet, this tiny difference may be detectable through a close study of the star's position over time. So far due to the difficulties of these measurements, no extrasolar planets have been detected this way thus far.

Doppler Shift: also known as the radial velocity method. This method relies on the fact that the planet and star are both orbiting a shared center of mass. If the orbit is edge-on, the star will move towards us and then away from us in its tiny orbit. When an object is moving towards us, the light we detect is blue-shifted (we see the light at shorter wavelengths than normal) and when an object is moving away from us, the light we detect is red-shifted (we see the light at longer wavelengths than normal). The Doppler shift for light is very similar to the Doppler shift for sound which you have probably witnessed if you've ever stood on the side of the road when an ambulance passed by. The ambulance's sirens sound different when they are approaching than when they are receding because the sound waves are compressed and then stretched. These changes in the star's spectrum (a plot of brightness coming from the star versus wavelength) due to the Doppler shift can be detected. This method has detected a good portion of all discovered extrasolar planets.

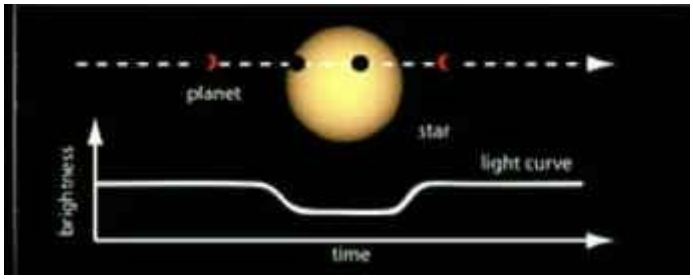
Transit Method: If the planet passes in between its parent star and the observer (meaning the orbit is edge-on), the light from the parent star can be seen to dip slightly as the planet blocks it. The majority of current extrasolar planets have been discovered this way.

Gravitational Microlensing: This method uses complicated mathematics from Einstein's theory of general relativity. The basis of this technique is the fact that heavy objects curve the space around them so when light travels by an object, the light can be magnified. Astronomers using this method look at a star that might have a planet as the star passes in front of a distant background star. The light from this background star gets magnified in a very special way by the planet of the foreground star (if the planet exists). If I am not explaining this method very well, don't worry! Gravitational microlensing is very controversial because it cannot be verified. The special alignment between the foreground star and the background star never happen again, so astronomers can't prove whether or not the special magnification they saw was real or just regular old measurement error.

Pulsar Timing: The first extrasolar planet ever detected was discovered in 1991 around a pulsar. A pulsar is a very old star that emits its light in beams that can sweep across our field of view (sort of like light from a lighthouse). These pulses can be very precisely timed (pulsars make very accurate clocks), but if a planet is orbiting the pulsar, the timing between the pulses gets altered. Because the environment around a pulsar would be very hostile to life, astronomers do not actively use the pulsar timing technique to find extrasolar planets. They are more interested in finding planets that could possibly harbor life and that are more like our Earth.

So to make some sense of all this stuff, most planets so far have been found using the Doppler and transit methods. However, the two most promising techniques for finding more Earth-like extrasolar planets are direct imaging and transits but we need to improve our technology.

Transit method



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

Club Meeting

Reminder Club meeting May 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