VAAS Website: vaas.universeii.com/ 2, April 2016

Vandenberg Amateur Astronomical Society presents The Sidereal Times

Messier 13 globular cluster (see page 5)

Meeting *News:*

The March meeting we discussed support for a Star party at Los Flores ranch that is scheduled for 14 May. Talked about various subjects and watched a video about the Mars Rover development called Mars Dead or Alive. Thanks Dave Covey for the video.

Reminder: VAAS club meeting April 8th 7:00PM Manzanita School, teachers lounge.

Lunar Calendar:

New Moon 7th
Full Moon 22nd

Vahan & Louise

Presidents Message

Happy Spring ! We have more clear skies, but our windy days are here again…..For our April 8th VAAS Meeting, I will do a presentation on the VAFB's role in preparing the space launch pad SLC-6 in 1985-86 for the Space Shuttle mission. Also I will explain how the tragic Challenger Disaster brought the west coast's first shuttle launch to a halt, and never to be lifted off at our base.

I have original newspaper articles and many pictures to share of both events, including the teacher Christa McAuliffe, along with the other 6 astronauts who lost their lives in the explosion on Jan. 28, 1986. If anyone in the club would like to bring photos or objects about the VAFB space shuttle program, I am sure we would be interested in seeing them. I personally need (on loan for a month,) more VAFB space shuttle **objects** (models, buttons, mugs, etc.) to place in my display I plan to do for May in the Lompoc Library on these same subjects. Thanks! Rudy from Los Flores Park in Santa Maria is working on a busy schedule for the park to do with Astronomy-reaching out to our club, and also SLO, and SB Astronomy groups to help him with his outreach programs.

April 23, 2016 - Solar Viewing 11am-2 pm. At Santa Maria's Los Flores Park. Details and directions will be sent out to anyone who needs them by asking Jana.**May 14- Astronomy Day –Star Party at the Los Flores Park.**

I hope to see support for these outreach areas! Also, we need a campaign to bring in new members to our club. I thank again the same members that come to meetings and do support our programs! We would be happy to see the rest of our members!**One more item- Let us send Get Well Wishes to Craig Fair who is recovering from recent hip surgery.**

Clear Skies and Warm nights….. Jana

Events

April 2nd ***Star party at the observatory.***

April 9th ***Star Party Figueroa Mountain site 1.5.***

April 16th ***Star Party at the Observatory***

April 18th Mercury will be at greatest elongation of 19.9 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 evening sky, low in the West just after sunset.

April 22nd Lyrids meteor shower is an average shower producing about 20 meteors per hour. It is produced by dust particles left behind by Comet C/1861 G1 Thatcher. The shower runs annually from April 16th through 25th but peaks this year on the night of the 22nd and morning of the 23rd.

April 30th ***Star Party at the Observatory.***

Wine Country Event

Star party's and Events

March 5th Star Party at Observatory cancelled due to weather.

Nuts!

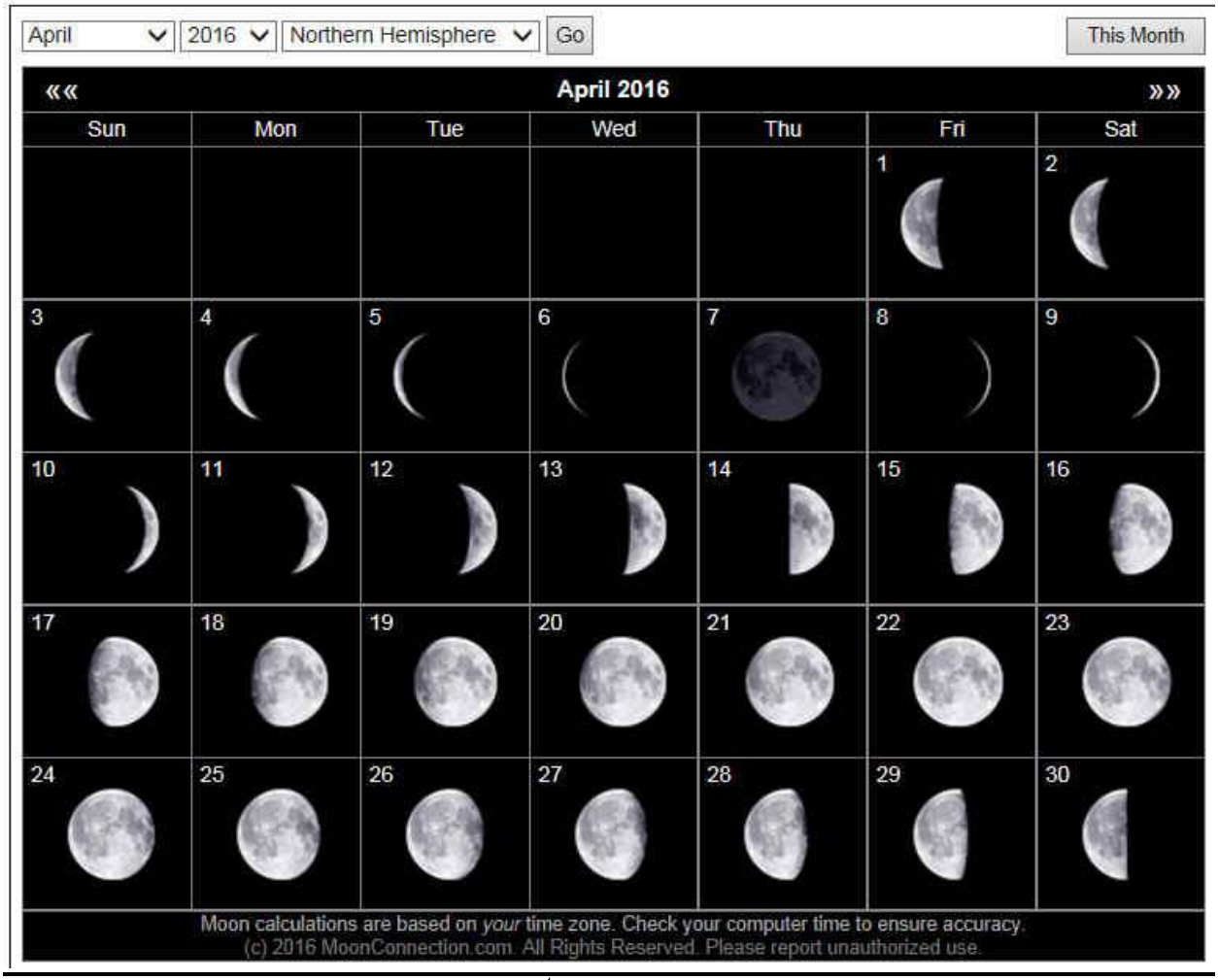
March 12th Star Party at Observatory cancelled due to Weather.

Nuts!

March 26th Star Party at the Observatory. On site Vahan, Dave Covey, Dave McNally, Vince Tobin, Justin Graves and Justin's friend and Mark. Changed the battery in the 14 inch scope controller. Vince set up his 16 inch Dob and piggy backed a long focal length refractor on the Dob. Justin had his 8 inch SCT and Mark an 8 inch Dob. Looked at several celestial objects with the scopes. Jupiter, M41, M42 and Caldwell 14, the double cluster, to name a few. The seeing was good but dew was forming about 9:00PM. Started a system alignment on the 14 inch but found it did not track correctly. Did some trouble shooting and found the mount type was incorrect in the controller. Programmed in the correct mount type and all worked OK. Proceed with a star alignment. It was a good night under the stars.

Vince Dob piggyback

April Moon



Full 22nd, New 7th, 1st Quarter 14th, Last Quarter 29th

Moon Facts

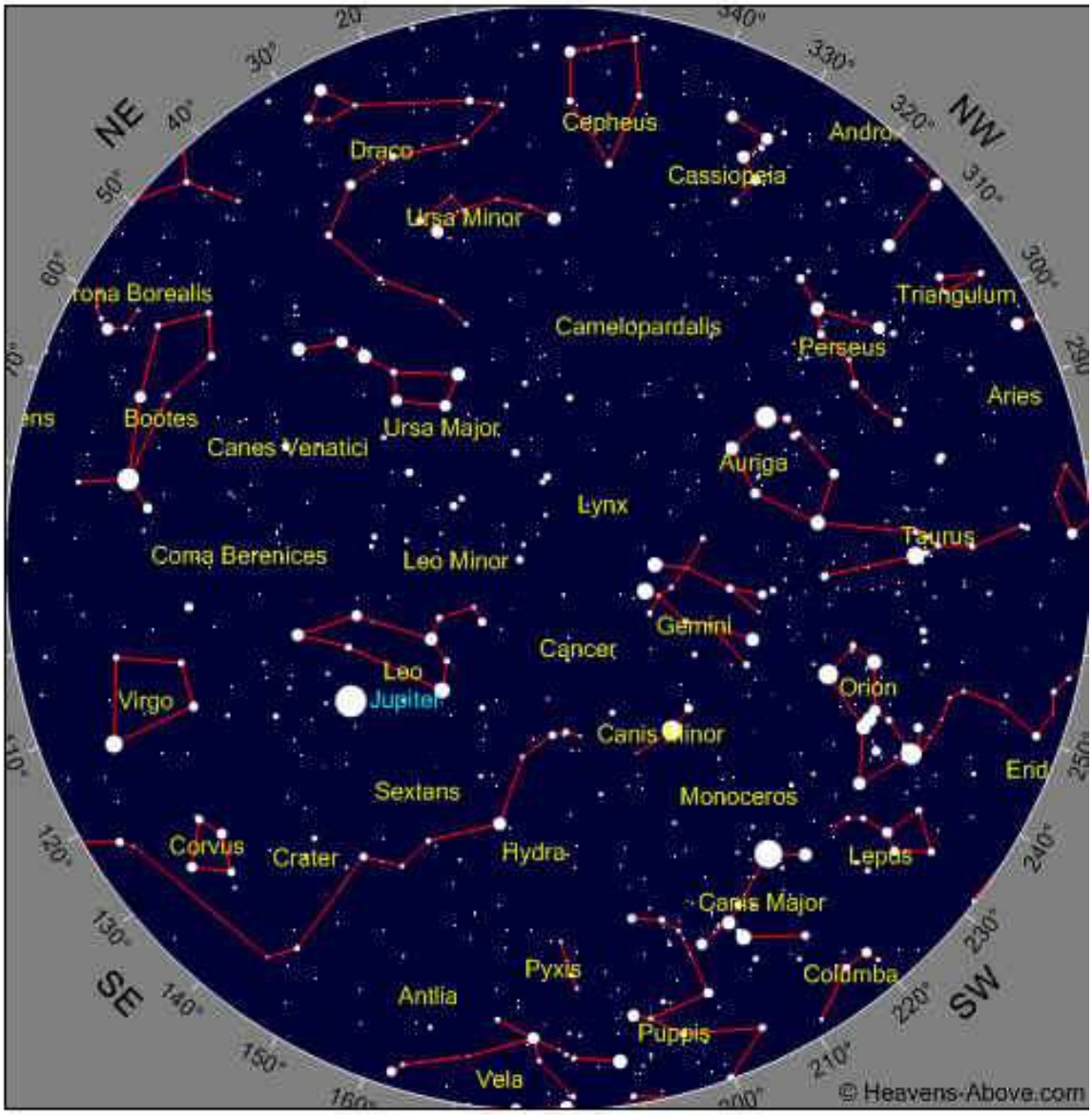
The surface area of the moon is 14,658,000 square miles or 9.4 billion acres

Only 59% of the moon's surface is visible from earth.

The moon rotates at 10 miles per hour compared to the earth's rotation of 1000 miles per hour.

April 2016 Sky

Some Objects of interest, M13, Mars, Saturn, Jupiter



Time

Year	Month	Day	Hour	Minute
2016	4	5	21	00

Photo Courtesy Vahan Yeterian

Messier 13, NGC 6205 Globular Cluster is about 25,100 light years distant from Earth and is located in the constellation of Hercules. M13 is about 145 light years in diameter and it is composed of several hundred thousand stars the brightest of which is a red giant, the variable star V11, with an apparent magnitude of 11.95v. At its distance of 25,100 light years, its angular diameter of 20' corresponds to a linear diameter of 145 light years – visually, it is 13' large. Towards its center stars are about 500 times more concentrated than in the solar neighborhood. The age of M13 was determined by Sandage as 24 billion years and by Arp as 17 billion years. Later in 1962 Arp revised his value to 14 billion years. M13 is peculiar in containing one young blue star, Bernard No. 29 of spectral type B2. The membership of this star was confirmed by radial velocity measurement and is strange for such an old cluster, apparently it is a captured field star. In the center of the cluster it is estimated that there are one or two stars per cubic light year. Nearby, about 40 arc minutes north-east of M13, is the faint (magnitude 11) galaxy NGC 6207, visible in many large and medium-size-field photographs of M13. This galaxy has recently produced a type II supernova (SN 2004A). Image capture was with a Meade 8" SCT at f/10 w/PHD2 guide. DSLR Canon T3 (mod) ISO 800, 8 x 200s lights, 4 darks processed with DSS

For What its Worth

The primary function of a telescope is to gather light and funnel it into the observer's eye. The larger the telescope, the greater the amount of light captured. Light gathering is a function of the area of the objective lens or primary mirror. Thus the aperture or diameter, determines the light grasp of a telescope. For a circular aperture, Area = πr^2, as the aperture is increased, the light grasp increases by the square of the aperture. This means an 8" aperture collects 4 times as much light as a 4" aperture. The 8" aperture has an area of 50 in^2, while the 4" aperture has only 12.5 in^2.

How much more light a telescope gathers compared to the unaided eye is determined by the ratio between the light-gathering area of the telescope and the light-gathering area of the eye. The aperture of the eye is determined by the size of the pupil. In general, the average pupil will open up to about 7mm in diameter. Note that this means if the beam of light coming out of the telescope eyepiece is larger than the maximum size of the eye, the eye is the limiting factor and effectively reduces the aperture of the telescope. The light gathering area of the 7mm pupil is then 0.06 in^2. For the 8" telescope, this gives a ratio of 50/0.06 = 833, meaning an 8" telescope gathers 833 times more light than the unaided eye.

This implies an object seen with the unaided eye will appear more than 800 times brighter through an 8" telescope. It is more complicated than that. While the previous statement is true for point sources (stars) it is not true for extended objects such as galaxies, nebulas and planets. This is because the light from an extended object is being spread out by the fact that the telescope is magnifying the image. So magnification factors into the equation; light is lost in proportion to the square of the magnification. There is a minimum magnification allowed by the limiting size of the pupil as described above. This works out such that the image through a telescope can never be brighter than the image as seen with the unaided eye. This seems counterintuitive. However, with optimum magnification (described below) the image will not be significantly dimmer and will be considerably larger and more detailed.

An additional advantage of aperture that comes into play when magnification is considered is image brightness at a given magnification. Through a given telescope, doubling the magnification reduces the brightness of an extended object fourfold. Doubling the aperture of a telescope makes the image four times brighter at the same magnification, or allows twice the magnification to be used while retaining the same image brightness. The direct ratio between telescope brightness and unaided eye brightness still holds for point sources. For this reason, stars will appear brighter than they do with the eye, independent of magnification.

The magnitude scale used to describe the brightness of stars is a logarithmic scale. Each magnitude is a difference of 2.5 in brightness. A 1st magnitude star is 2.5 times brighter than a 2nd magnitude star. A 2nd magnitude star is 2.5 times brighter than a 3rd magnitude star. And the difference between a 1st magnitude star and 3rd magnitude star is 2.5 x 2.5 = 6.25 times. A telescope that can make stars appear 833 times brighter than the unaided eye will allow stars 7.3 magnitudes fainter to be seen. If you can see 6th magnitude stars with the unaided eye, you should be able to see 13th magnitude stars through an 8" telescope. In actuality, fainter stars can be seen. This is because of the decrease in brightness of the sky background seen through the telescope. Sky brightness is also a function of magnification, the sky growing darker as the power is increased. At a magnification of 100x, the sky background appears 2.7 magnitudes darker than without the telescope, which translates to an extra 2 magnitudes of reach, allowing 15th magnitude stars to be seen. A darker sky allows fainter stars to be seen with the unaided eye will of course allow even fainter stars to be seen through the telescope.

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

Club Meeting

Reminder Club meeting April 8th at 7:00Pm Manzanita charter School.

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