Dreams must be heeded and accepted.
For a great many of them come true.
Paracelsus

Newsletter of the Pomona Valley Amateur Astronomers

Volume 29 Number 6 ***nightwatch*** **June 2009**

President's Address

Summer is almost here. We don't have to bundle up to spend a night observing the sky. It is the time of year that we can look toward the center of our galaxy, the richest part of the Milky Way. I hope that many of you will take the opportunity to attend one or more of the PVAA star parties we have coming up.

First, on June 12th I'll be making my yearly trip up to Grandview Campground in the White Mountains. I will return home on June 19th. I visited Grandview in July 2000 and I have tried to make at least one trek up each summer ever since. When it is clear this is a terrific observing site! The night sky suffers from very little light pollution and the faint fuzzies that I like to look at really show up beautifully.

Located east of Bishop, Grandview Campground has become my favorite observing site. (My second favorite is Mesquite Spring in Death Valley.) Although the elevation is 8600 feet, the nighttime temperatures are surprisingly comfortable. And at that elevation there is a lot less atmosphere between you and the object you are observing. The price of gas is creeping higher again, but I still think that it is well worth the long drive.

The last couple of years I have attempted to observe a gravitationally lensed quasar that has been given the name "Einstein Cross." The first year I had some doubt about my observation, but I believe some photons from the quasar hit my retina and created an impression. I was excited to have had any perception of this amazing object. The second year I was much more sure of what I saw. I still could not see all four components of the object simultaneously, but I know that I saw it. The Einstein Cross has a redshift of 1.695. Its distance is estimated at 8-9 billion light-years, making it the most distant object that I have seen.

I am returning from White Mountain so as not to miss the Mount Wilson 60-inch observing session on June 20th. Among of the most thrilling experiences of my PVAA life (or of my life in general for that matter) have been our group trips up to Mount Wilson to spend a night observing through 60-inch telescope. I was afforded views of the planets Jupiter and Saturn that rivaled images from the Hubble space telescope. Revealing 17th magnitude stars with ease and intricate detail, invisible in a lesser instrument, planetary nebulae such as the Ring and the Cat's Eye were nothing short of spectacular. A night with what was once the largest telescope in the world is a unique and unforgettable adventure for any amateur astronomer. We are only allowed to have 25 people in the dome and the list is filling up fast. If you want to join us in observing with a that great and historic instrument then you had better sign up asap.

In July we will be making our second trip to Mojave River Forks Regional Park. Those that attended the April star party there were favorably impressed. It is reasonably dark, quite close compared to most of our sites, and we have our own private section of the park in the Equestrian Area.

In August we will return to an observing site that we have not used for several years. This is another relatively nearby site, the helipad at Angelus Oaks. This site is about an hour's drive and is a little darker than the Mount Baldy site, especially towards the west. The short dirt road leading up to the helipad can be rough with deep ruts. While I believe most cars can make it up there, if you car has very little ground clearance you might want to talk to someone who has been there before you go.

Well, I hope to see many of you under a night sky sometime this summer. Happy stargazing!

Ron Hoekwater

Club Events Calendar

June 5, General Meeting - Tim Thompson on String Theory
June 13 - 19, Ron plans to be at White Mountain
June 20, Mount Wilson viewing with 60" - Contact Ron
June 20, Star Party -Claremont Hills Wilderness Park
June 24, – Galster Park, West Covina 7 – 9 PM

July 2, Board Meeting
July 10, General Meeting - Speaker Phillip Choi, Professor, Dept of Physics & Astronomy, Pomona College
July 11, Tour of Mt Palomar 2 PM.
July 18, Star Party - Mojave River Forks Regional Park
July 20, Project Bright Sky, Junior Blind of America, Malibu
July 25, Public Star Party at Griffith Observatory 2 – 9 PM
July 30, Board Meeting

August 7, General Meeting - Speaker Greg Lyzenga, Geophysics Professor, Harvey Mudd College on Asteroid Occultations
August 22, Star Party - Helipad at Camp Angeles
August 25, Ontario Library Main Branch, 7 – 9 PM
August 27, Board Meeting

September 4, General Meeting
September 19, Star Party
September 24, Board Meeting
September 26 - 27, Second Annual PATS, Pasadena

October 2, General Meeting
October 17, Star Party
October 22, Board Meeting
October 27, Ontario Library Main Branch, 7 – 9 PM

November 6, General Meeting
November 11 – 15, Nightfall - www.nightfall2009.com
November 14, Star Party – Mecca Beach at Salton Sea
November 19, Board Meeting

December 4, - Holiday Party
December 12, Star Party
December 17, Board Meeting

January 19, 2010, Main Branch, Ontario Library, 7 – 9 PM
January 21, 2010, Board Meeting
January 29, 2010, General Meeting

February 18, 2010, Board Meeting

Saturday, July 11th - SCAE Swap Meet, Movie, & Star Party
Saturday, July 18th - Telescope & Astronomy Demonstration

On Saturday, July 11th, we will host an astronomy swap meet in the OPT parking lot from 10AM through 4:30PM. Palomar Community College, located about ten miles east of the store, will co-host the SCAE public star party from 6PM until 11PM that evening. Representatives from companies like Celestron, Vixen, Tele Vue, Meade, Lunt Solar Systems, and more will be on hand to show you their newest telescopes!
More information on events and Giveaway Prize List is available at http://www.optcorp.com OPT is at 918 Mission Avenue, Oceanside, CA

For Sale by Club Member

8" Celestron Dobsonian - $250 Call Joe - (909) 949-3650

Get your DVD of Tony Cooks presentation on the beginnings of the PVAA.

Only $2.00

Contact Claire Stover

Palomar Observatory

On Saturday, July 11th at 2:00 PM, the PVAA is touring Palomar. The limit of 30 people have signed up, but if you are still interested, please contact **Claire Stover** .
If you have signed up for this event, but cannot attend, please let us remove you so that others may sign up.

PVAA Officers and Board

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May General Meeting

We were reminded of summer PVAA events, namely our visit in June to Mt. Wilson and in July to Mt. Palomar. If you are on the list for Mt. Wilson, please confirm your spot by paying Ludd $100 per person to attend. Those signed up for Mt. Palomar, would you please check your calendars to make sure you are still able to attend since we have a few on the waiting list for that trip. Cost for Palomar is $5 per person and you may pay on the day of the event.

May Featured Speaker

Tim Thompson, formerly of JPL, joined us for the evening. Fortunately, I am now able to write that the subject of his talk, the Herschel and Planck spacecraft missions, were successfully launched by the European Space Agency on May 14th, about one week after our meeting. The Europeans usually launch rockets from their Spaceport at Kourou, French Guiana. For the geographically challenged among us, that city is located on that country's coast. The country itself is in north eastern South America, sandwiched to the north of Brazil between that large country and the Atlantic Ocean along with other small neighbors Suriname and Guyana. With a population of only around 230,000 people, the spaceport accounts for a quarter of the economy of this country and gives jobs to about 1700 people. The Space Centre has been operational since 1968, originally for the French who still run French Guiana. In 1975 the European Space Agency was founded and the facility has been shared by the French and the ESA since then. The Space Centre's latitude is 5°10', only 300 miles north of the equator, and is in an advantageous spot for rocket launches. When the craft are launched to the east, they pick up an additional 1,100 miles per hour from the speed of the Earth's rotation. It is also a favorable location for craft which are heading into geosynchronous orbits.

The two missions were launched together aboard one rocket as a cost saving measure. The Herschel craft is carrying a Cassegrain telescope which will be cooled to 0.3 degrees Kelvin with liquid helium. It will conduct its observations of a little-studied part of the spectrum. The Herschel plans to observe star and galaxy formation by looking at wavelengths in the far infrared, from 55 to 672 microns. These wavelengths cannot be observed well from Earth due to the moisture in our atmosphere. By looking at this radiation range the telescope will be able to see much colder bodies than we have been able to study before. Scientists will also be able to see objects behind dust and gas clouds which scatter and obscure much of the light in visible wavelengths but are more transparent at the long wavelengths where Herschel will be looking.

Planck is scheduled to complete two scans of the entire sky during its first 15 months, studying the cosmic microwave background radiation as a means to observe the structure and early history of the universe. It will also be kept cold with helium, requiring temperatures 1/10th of a degree above absolute zero to make its measurements. Planck observations should show the appearance of the universe as it was over 13 million years ago. Both craft are heading to L2, one of the Lagrange points which require a minimum of energy to maintain a stable position relative to the Earth and the sun. An L2 position places the craft on the opposite side of the Earth as the sun. It will stay about 900,000 miles away from our planet or about 4 times as far away as our moon. Keeping that respectable distance along with the help of large supplies of helium will keep the instruments cold enough for years of scientific discoveries.

Thank you for your interesting lecture, Tim. It was excellent timing to hear about the science planned for the two new telescopes just before they went sent successfully off into space to begin their missions.

Claire Stover

References:

http://www.lonelyplanet.com/maps/south-america/french-guiana/

http://en.wikipedia.org/wiki/French_Guiana

http://en.wikipedia.org/wiki/Guiana_Space_Centre

http://sse.jpl.nasa.gov/missions/profile.cfm?r=H&Display=ReadMore

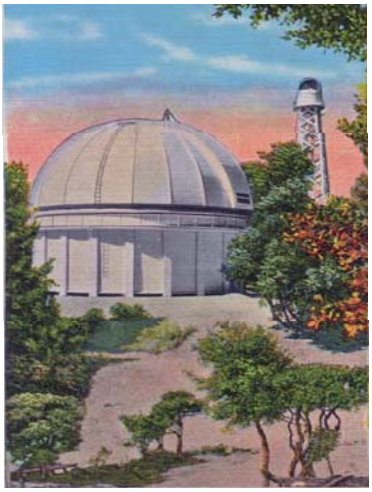
http://herschel.jpl.nasa.gov/

http://en.wikipedia.org/wiki/Lagrangian_point

Back to work.

PVAA Mount Wilson June 20, 2009

Call Ron Hoekwater to reserve your place at the eyepiece. Time is running out! 909/391-1943



What's Up? - The Hairy Virgin & The Mule Driver

The Coma -Virgo Realm of Galaxies was "hairy" even to early viewers who saw fuzziness in Coma Berenices or Berenice's Hair. They connected it to a story of Queen Berenice of Egypt who cut off her famous hairy locks and laid them on Aphrodite's altar as an offering to the gods to bring back her husband king from a middle eastern war.

Astronomer Charles Messier (in 1781) was the first to chart and remark on the clusters of nebulae in Coma Berenices, nearby Virgo (Virgin), Canes Venatici (Hunting Dogs) and Leo (Lion). Then it was Edwin Hubble (in 1925) who would prove that these nebulae were remote and massive systems of stars and interstellar gas far outside our own Milky Way star system. So they came to be known as galaxies (milky objects) just like our own Milky Way. Today there are over a 100 billion galaxies in the observable universe each containing many billions of stars. The Coma -Virgo region has several galactic clusters, each containing thousands of galaxies. This area had long been called the Realm Of The Galaxies but because of even more distant galactic clusters elsewhere it is now also called the Local Supercluster. This makes uncountable stars millions of light years away sound like Mr. Roger's neighborhood.

The Coma Berenices and Canes Venatici clusters are the most distant but here lie several discernible large galaxies. There are the famous spiral galaxies M64 (The Blackeye), M63 (The Sunflower), M101 (The Pinwheel), and the double M51 (The Whirlpool). Here also is the North Galactic Pole where we can gaze into intergalactic space with only a few Milky Way stars getting in our way. Although the nearby (270 light years) Coma Star Cluster (Mellotte 111) is probably the original "hairy" object.

The closer Virgo Cluster, which is linked with our Local Galactic Group, contains the largest number of galaxies visible in smaller telescopes. Here are Messier galaxies so close one can easily move a telescope from one to the other without following a star chart.

Late at night gazing at innumerable stars and their possible planets one can't help but think of other intelligent life forms gazing back. Although there are those who would like to think of human beings as the only life in the universe, with an almost infinite number of stars it seems that there must be "aliens" out there. Searches for radio signals from other intelligent life forms have failed so far. But the odds are bad, looking at other stars and galaxies is also looking back in time and it takes a long time for radio signals to travel through deep space. Also, most life forms on this earth don't send radio signals into space. Apes, cats and dogs don't really want to communicate with other planets. Even humans have been broadcasting radio signals for only about a hundred years. All this could be true for other inhabited planets as well. It has even been suggested that as soon as a highly intelligent life form becomes technically advanced enough to send out radio signals, it is also capable of destroying itself.

Now all this lofty talk of infinity can make one forget those scientific pioneers who dared to go beyond self-centered notions of earth as the center of the universe. Let's look at two local astronomers who, on Mt. Wilson in the 1920s, changed how we think about the universe by demonstrating the existence of other galaxies beyond out own. I'm thinking of Edwin Hubble (1889-1953) and his faithful sidekick Milton Humason (1891-1972).

Edwin Hubble was born in Wheaton, Illinois in 1889. He was originally noted for winning prizes in track and field. He won seven first places in a single track meet at a high school that would one day be named after him. He won the state record for high jump, and there was talk of the Olympics. But he soon turned to mathematics and astronomy and become one of the first Oxford Rhodes Scholars. In England he developed an English accent he affected all his life, often to the irritation of fellow astronomers. He returned to Illinois to become a high school teacher and head basketball coach. Then he studied law and become a member of the state bar. Always ambitious, he earned a PhD in astronomy and worked at Yerkes Observatory photographing spiral nebulae. In 1919 he joined Mt. Wilson's Observatory staff where he would prove that spiral nebulae were "island universes."

The early life of Hubble's assistant Milton Humason was like Hubble's in ambition only. He was born in unremarkable Dodge Center, Minnesota in 1891. He dropped out of high school and got a job as a mule driver taking equipment up winding trails to Mt. Wilson. A man of quiet charm, he soon married the observatory engineer's daughter, became a janitor and then was promoted to night assistant. Because of his skills as an observer and his willingness to live on the mountain, unlike professional astronomers, he was appointed to the scientific staff in 1919. This was the same year PhD and Rhodes Scholar Hubble arrived and hired the school dropout and former mule driver as his assistant living on the mountain.

Together, using the new Hooker 100 inch Telescope, they would identify the "standard candle" of Cepheid variables in spiral nebulae proving that they were in fact distant galaxies like our own. Hubble devised the most commonly used system for classifying galaxies according to visual appearance. Humason just missed discovering Pluto due to the fact that his photographic plate had a confusing defect on it. Both men discovered comets and asteroids and have their names on lunar craters. Of course Hubble has an orbiting space telescope named after him. This telescope has just been repaired and should be good for several more years.

Most historically important, Humason perfected a method of photographing hundreds of distant galaxies and determining the speed at which they are moving away from each other. The degree to which a spectrum is "red-shifted" indicates the speed at which a galaxy is speeding away. Through these observations it became obvious that the universe was expanding. Hubble and Humason had discovered the Big Bang B if not the origin of the cosmos, then at least its more recent incarnation. Rumor always had it that the modest former mule driver Humason really made the breakthrough observations which the extroverted PhD Hubble took credit for, but only the starry galaxies know for sure.

Lee Collins

PVAA Members at RTMC May 22, 2009 to May 25, 2009

Photos by Ron Hoekwater

We wanted to share this picture with you and see if you could identify the astronomer in the yellow shorts.

The answer will be revealed in next months Nightwatch