nightwatch
Newsletter of the Pomona Valley Amateur Astronomers

Volume 30 Number 2 ***nightwatch*** **February 2010**

President's Address

In this President's Message I want to inform PVAA members of several important upcoming events. First, at our February meeting we will have a special election for the board member at large seat which is being vacated by John Stover. Please be there to cast your vote if you can.

On Tuesday, February 23rd we will have a public star party at the Colony High School Branch of the Ontario Public Library. I hope many of you will be there to support this event.

The March 13th star party will our third at the Mojave River Forks Regional Park. As this site is relatively close by we are hoping to attract some of the public to come out. It will be a chance to show them some of the objects that can't be seen from inside the city.

Sadly, our night skies are rapidly becoming more light-polluted. In a few weeks (March 3- March 16) the 5th annual Globe at Night Campaign will take place. To quote the organizers, "GLOBE at Night is an annual 2-week campaign in March. People all over the world record the brightness of their night sky by matching its appearance toward the constellation Orion with star maps of progressively fainter stars. They submit their measurements on-line and a few weeks later, organizers release a map of light-pollution levels worldwide. Over the last four GLOBE at Night campaigns, volunteers from over 100 nations have contributed 35,000 measurements." If you would like to participate check out this website:

http://www.globeatnight.org.

This month our speaker will be Bob Branch. Bob is a member for many years of Los Angeles Astronomical Society and Pomona Valley Amateur Astronomers. He has several decades of Solar and nighttime observing experience. Few amateurs have more or broader knowledge of astronomy than Bob. Bob's topic will be E.E. Barnard, the great American astronomer. Barnard's career began when all astronomy was visual and stretched into the era of photographic plates. You won't want to miss this presentation on one the most gifted of observational astronomers.

Happy stargazing!

Ron Hoekwater

PVAA Officers and Board

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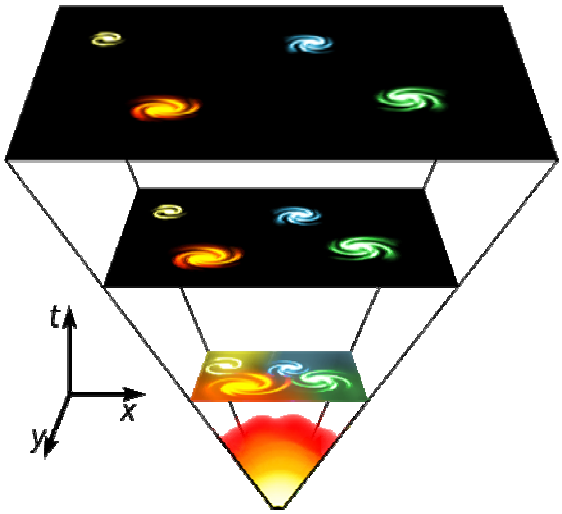
January General Meeting

Our speaker was member Larry Kawano, best known for running the AstroCamp facility in the mountains of Idyllwild. The Club enjoyed a star party weekend there in August of 2008. Goodness, has it been that long ago – time flies!

Larry's presentation took on various astronomy myths and shared the truth behind some popular misconceptions. One interesting subject was the Big Bang. Here is a nice picture that illustrates the concept well:



Rather than being an explosion, where matter expands to fill empty space, the material expanded along with space itself. I remember an analogy of galaxies as raisins in a rising loaf of bread. The starting point for this expansion is currently thought to be around 13.3 to 13.9 billion years ago and this growth of the universe continues to this day. The term itself was first used by Fred Hoyle in a 1949 radio broadcast. Hoyle was actually a believer in the steady state model of the universe.

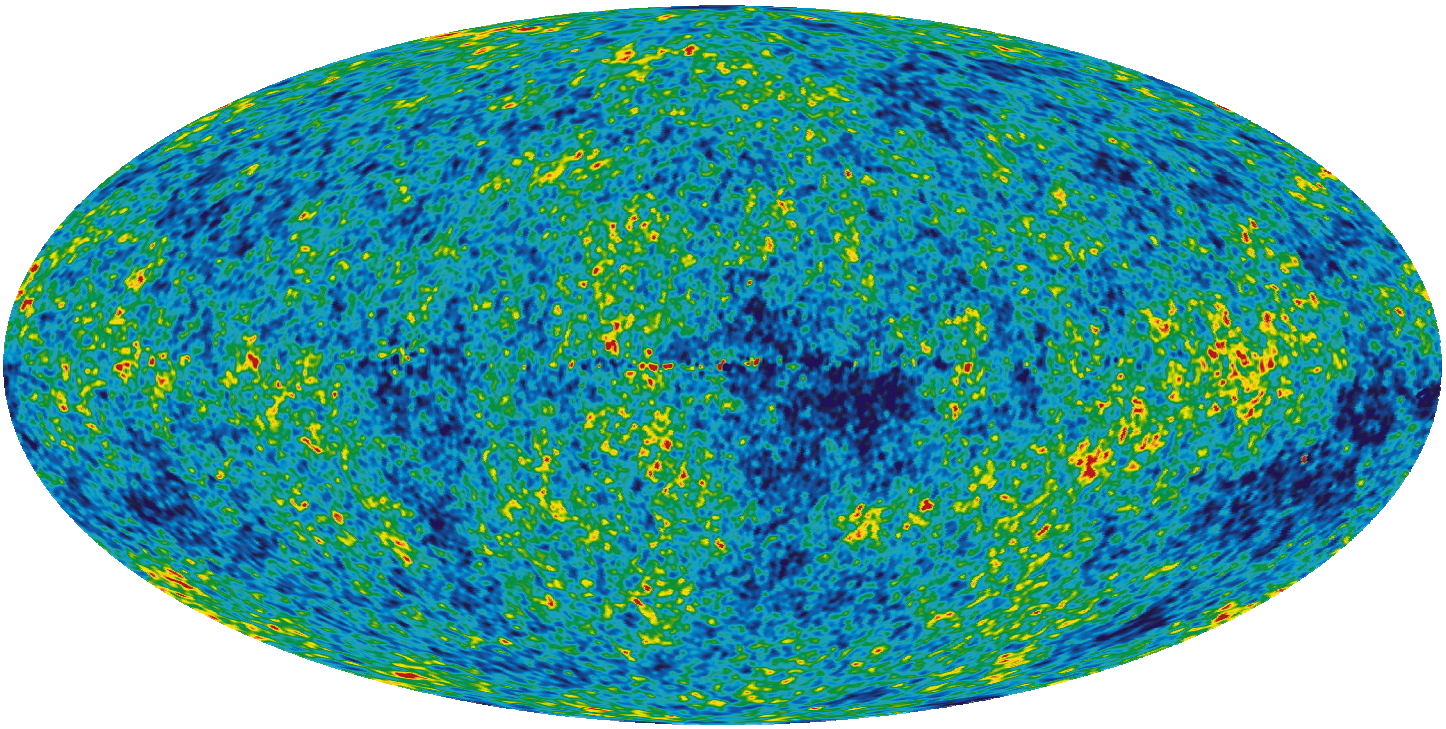
The Steady State hypothesis was popular in the 1950s and 60s and refers to the idea that new matter is being continuously created; fueling the universe's observed expansion.

The Big Bang Theory became more widely accepted when cosmic microwave background radiation (CMBR) was first detected in 1964 by radio astronomers Arno Penzias and Robert Wilson, a feat which earned them the 1978 Nobel Prize in Physics.

CMBR is believed to be the glow left over from the uniform plasma present at the start of the universe's expansion. It is strongest in the microwave portion of the electromagnetic spectrum – hence the name. Below is a well known picture of this radiation's distribution throughout the sky as taken by the Wilkinson Microwave Anisotropy Probe which was launched in 2001. The average temperature is 2.725 Kelvin and the different colors represent slight temperature variations. Red is warmer and blue is cooler but only by about 0.0002 degrees.

We enjoyed your myth debunking lecture, Larry, and thank you for an interesting evening.

Claire Stover



References:

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

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

Mesquite Spring Star Party

It was late Saturday afternoon when I arrived at Mesquite Spring Campground in Death Valley. Joe Hillberg and Dennis and Suzie Lumbert had already been there for a couple of days. Fortunately there was enough room in their two camp sites for me to join them. Joe mentioned that he had seen Bill Connelly. Bill decided to observe from a different location which was recommended to him by a ranger. After visiting for a few minutes, I went to work setting up and was ready to observe by the time it was dark.

First we looked at Mars which was a couple weeks past opposition. The seeing was steady and I was told that it had been even better the night before. Next we looked at some deep sky objects. For this conditions were not as good. I believe thin clouds were preventing us from seeing deep sky objects as well we should have from a site this dark. Still it was much better than home.

On Sunday morning Joe headed out early. Dennis and Suzie left a little later and we were able to say our good byes. Now that I was alone, I headed off to do some exploring. That is one of the great things about observing from Death Valley. There are so many things to see and do during the day.

I headed northeast into Nevada on Highway 267. Originally the plan was to visit Scotty's Castle, but then I decided to go somewhere that I hadn't been before. About 20 miles past Scotty's castle, on the north side of the highway, was a normally dry lake which had a few inches of water in it. It was a good opportunity to stop, take some pictures, and eat a little lunch.

A short distance past the dry lake was a sign announcing daily tours of "Hard Luck Mine Castle."

A second "castle" within 20 miles on the same sparely traveled highway. I decided to take a look. The "Hard Luck Mine Castle" is 9 miles north of Highway 267 along a good dirt road, no deep ruts or washboard. The "Castle" is a round 4 story cinder block and concrete structure with a beautiful view of the canyon and valley below. When finished the there will be a pipe organ and an indoor fountain.

Ten miles farther down the same dirt road is Gold Point, Nevada, once a ghost town, it now has about 2 dozen residents. At its peak of prosperity there were about 1,000 people, 225 buildings (counting outhouses), and 13 saloons. Walking around the town one can get some idea of what it was like in the old west.

Last, I made a short visit to Goldfield, Nevada. Short was all I had time for as it was becoming late afternoon. Goldfield is sometimes described as a ghost town, but it actually has over 400 hundred residents and is the county seat of Esmeralda County, Nevada. There are several impressive buildings in town, including the high school, courthouse, and hotel. When I have more time I'd like to go back and visit again.

On Sunday night, the last night of my stay, the sky was a little better for transparency. With no particular observing plan, I enjoyed looking at few objects before going to bed. On Monday morning, I headed home having had a very enjoyable 3-day-weekend.

Ron Hoekwater

Club Events Calendar

February 26, General Meeting

March 13, Star Party – Mojave River Forks Equestrian site
March 18, Board Meeting
March 26, General Meeting - Sara Martin of Helio Research
"Solar Prominences"
April 10, Star Party - Cottonwood Springs
Joshua Tree State Park
April 15, Board Meeting
April 20, 2010, – Main Branch, Ontario Library 7 – 9 PM
April 23, General Meeting - Matt Wedel
member and author of 10 Minute Astronomer
May 6, Board Meeting
May 12 - 16, RTMC
May 21, General Meeting - Dr. Eric Grosfils,
Pomona College Geology Professor
June 5, 2010, Saturday – Star Party – Mt. Baldy
June 12, Saturday – Mt. Wilson 60" viewing
June 17, Board Meeting
June 25, 2010, General Meeting

July 10, Star Party – White Mountain
July 23, General Meeting - Bob Eklund and Al DeCanzio
Dialogue on the Galilean Imagination
August 7, Star Party
August 19, Board Meeting
August 27, General Meeting

September 4, Star Party
September 16, Board Meeting
September 24, General Meeting

October 9, Star Party
October 14, Board Meeting
October 22, General Meeting

November 6, Star Party
November 11, Board Meeting
November 19, General Meeting

Based on member requests, we have another chance to purchase a beautiful 2010 Astronomy calendar for only $7. I believe Ludd has a couple left, please let him know if you'd to reserve one

Claire Stover

I refer to those outer space aliens, the ones from science fiction tales that are always invading Earth. Where do they come from? Even with a fast as light space drive, aliens must come from planets within a dozen light years. How many inhabitable planetary systems are there in that range? Let's check, just in case we want to invade them, as in the movie Avatar.

The closest star is Alpha Centauri at 4.3 light years. Not visible in our area, it lies just below the horizon in Centaurus. I saw it recently in Hawaii and was surprised how bright it appeared. I shouldn't have been, because it's often listed at the third brightest star even though it's comprised of two first magnitude stars. These two stars are almost sun like in size and form. There's also a third far out companion, an 11th magnitude red dwarf called Proxima. Proxima is so named because it's approximately the closest star to our Sun at 4.24 light years. Dwarf star Proxima is about one eighth the size of the sun. This triple system is a mere 25 trillion miles away.

Because of this relative nearness, Alpha Centauri is popular in science fiction stories. In Star Trek and other imaginary realities it is loaded with habitable planets and busy beings. It's envisioned as the first target for unmanned interstellar exploration. In truth, no planets have been observed in the system. As with all close stars any planets would have to be very large to be seen at all. Alpha Centauri is also known as Rigil Kentaurus (Centaur's foot) for its position in the constellation of Centaur and Toliman (Ostrich) for some odd reason. As with other close stars this system has a high proper motion. It moves gradually thorough the years against its background sky.

The next closest star at 6 light years and a faint 9.5 magnitude is Barnard's “Runaway” Star. A red dwarf like Proxima, it's too dim to be seen without a telescope. Named after astronomer E. E. Barnard, it's called a runaway because it has the highest known proper motion. It moves half the diameter of the full moon in a human lifetime, most stars don't seem to move at all. Only several times the size of Jupiter, its 12 billion years old, an extreme age for a star. Red dwarf stars are given to intense flares, another hazard to the existence of life near an already cool, dim star.

At a distance of some eight light years are two more very faint red dwarf stars with tedious catalogue names. Although Wolf 359 (13th magnitude) has appeared in science fiction stories as the obvious origin of werewolf aliens. Then, at 8.5 light years, we come to the next visible close star, Sirius the Dog Star.

Known as the Dog Star, because it's in the constellation of Canis Major the Big Dog, Sirius is the brightest star in our sky. Sirius is a young white hot star, three times our sun's size and 25 times brighter. Its name means “searing” because of its brightness and its first appearance in the hot “dog days” of late summer. Perhaps influenced by Sirius, dogs were thought to become more rabid during this period. Ancient cultures worshiped Sirius, sacrificing animals to its sparkle, sometimes dogs. It's always been an ideal navigational star.

Sirius has a tiny white dwarf companion, the remnant of a collapsed red giant. Called Sirius B or “the pup” it was discovered in 1862 by an American A. G. Clark. A bright concentrated star that has almost the mass of our sun, it's not much bigger than Earth. Science fiction loves to surround Sirius with planets inhabited by dog like aliens. In reality, no planets have been observed.

As we go further out, we encounter three more dim red dwarfs until we reach the first sun like single star, Epsilon Eridani (in the constellation of The River) at 10.5 light years At 3.7 magnitude, this simply Greek letter named star shows how unimpressive our sun would appear at this distance. On a more positive note, it has yielded evidence of a gas giant planet, making it the nearest extrasolar system. No radio signals have been detected, and there's a lot of rocky debris, but still this is the closest system that's like our own. Science fiction tends to inhabit it with hoards of highly intelligent aliens.

Three more 'telescope only' red dwarf stars follow, including one triple system oddly named EZ Aquarii. A distance of 11.4 light years brings us to Procyon, a first magnitude star in Canis Minor, the Little Dog. Procyon rises before Sirius and literally means the Pre-Dog Star. Amazingly, it's very like Sirius. It's a white hot star twice the size of our sun and nine times brighter with a white dwarf star companion. This white dwarf orbits very close in and was discovered by an American at Lick Observatory in 1898. Like Sirius, no planets have been observed and the large amount of radiation in its system could be hazardous to life. At 11.5 light years we come to the modest 5th magnitude double star 61 Cygni and two more red dwarf stars. One of these is a double red dwarf which has appeared in science fiction because its tag Groombridge 34 suggests gloomy, spooky aliens up to no good.

This brings us to a dozen light years from our sun and two stars which could harbor life. At 11.8 light years lies Epsilon Indi (in the constellation of The Indian) at 4th magnitude. Another close star with a high proper motion, it has two tiny brown dwarf companions. Brown Dwarfs are not much bigger than gas giant planets, suggesting other unseen planets.

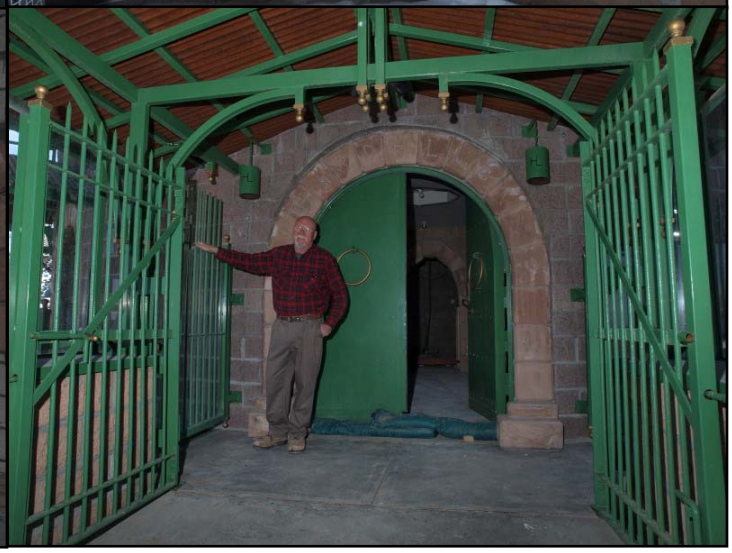
Also at 11.8 light years is the single sun-like star, Tau Ceti (in the constellation of The Sea Monster) at 3.5 magnitude. Like other close stars, Tau Ceti has been listed as a target for Search for Extraterrestrial Intelligence (SETI), but no radio signals have been detected. No planets have been found, and the system seems to have a heavy debris disc which makes it likely that any planets would experience a bombardment of asteroids of the kind that wiped out the dinosaurs. But a science fiction story I read once had human looking aliens landing and telling a farmer they were from Tau Ceti. The farmer asks, “Is that near Kansas City?”

Beyond a dozen light years are scores of more red and brown dwarf stars before we reach other bright stars Altair (16 ly.), the location of life in the movie Forbidden Planet. Or Vega (25ly.), which has life in the movie Contact. Or the sun like Fomalhaut at 25 light years. Fomalhaut has produced the first photograph of a huge planet plowing through orbiting dust.

So, while we've learned that red dwarf stars are very numerous (at least in the observable area around the sun) and that double star systems are more common than single stars, the outlook for near-by systems harboring life looks bleak. But considering the hostility of most science fiction alien attacks, perhaps it's a good thing. But what about ET, and those paternal aliens who come to rescue us from our own self destructive tendencies? The search goes on.

Lee Collins

Images of Hard Luck Mine Castle
By Ron Hoekwater



Images of Gold Point Nevada
By Ron Hoekwater