



Newsletter of the Pomona Valley Amateur Astronomers

To know that we know what we know,
and to know that we do not know what we do not know,
that is true knowledge.

Nicolaus Copernicus

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nightwatch

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President's Address

At our February meeting Bill Connelly was elected to the PVAA board as board-member-at-large. Bill has been a very active participant in our public outreach events. He has also put forward some great ideas on encouraging more people to become active in amateur astronomy. Welcome aboard Bill!

Bill is filling the seat vacated by John Stover. John and Claire are in the process of moving up to the Sacramento area. John's contributions to PVAA have been many but perhaps most importantly he has been our webmaster and newsletter editor.

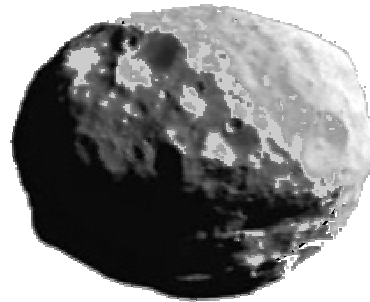
Claire has held the position of Secretary for a period spanning two centuries (or to put it another way since September of 1999). Claire has probably been the most active board member over that time. She has been the primary person organizing many of our club tours and day trips such as those of Griffith Observatory, Mount Wilson Observatory, and Edwards Air Force Base, along with the NASA facility located there. She has also done much of the work (along with Craig Matthews) to make our public star parties successful. The annual PVAA Holiday Party is mostly Claire's doing. And she is the number

one person keeping our board and especially me organized (to the degree that one can say I'm organized). But believe me I would be much less organized without Claire.

We will greatly miss the Stovers, but at the same time getting fresh faces and new ideas is healthy for our club. As Claire and John gradually become less active in PVAA, I hope other members will, as Bill Connelly has done, step up and get involved.

Happy stargazing!

Ron Hoekwater



PVAA Officers and Board

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February General Meeting

For our second lecture of the New Year we heard about a new science museum, the Columbia Memorial Space Center, located in nearby Downey. We hope to hear from a museum representative in September then we will then plan a visit based on member interest. See below for a link to the Museum's website.

Next, a vote was conducted to fill our open Board Member at Large seat. Bill Connelly won handily and will take his official place on the board starting in March. Welcome aboard, Bill and thank you in advance for your time and efforts for the Club.



Our main speaker for the evening was Bob Branch. Long term Club members recalled Bob's years with our Club and were glad to see him again and of course to learn more about his topic – E.E (Edward Emerson) Barnard. My own knowledge of this man was rudimentary and I was only familiar with an object called Barnard's Star.

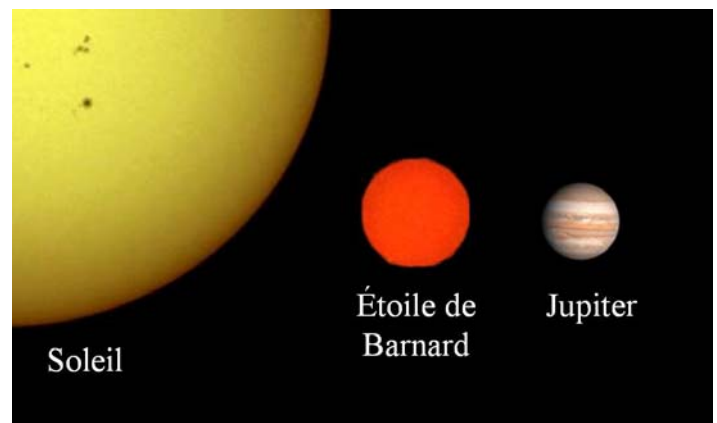
After hearing about the rags to riches story of Barnard from Bob I had a much greater appreciation of this self-made astronomer. E.E. discovered his namesake object in 1916 in the constellation of Ophiuchus. While Barnard had excellent observing skills, a telescope was required to observe this star. Despite its closeness to us its magnitude is only 9.57. It is an old object, estimated at 7 to 12 billion years old, about twice the age of our sun. Since it was formed much longer ago, its rotational period is about 130 days while our Sun's "day" is only 25 of our days long. Barnard's Star is so faint that if it were at the same distance from Earth as the Sun is, it would appear only 100 times brighter than a full moon, comparable to the brightness of the Sun at 80 AU. Even Pluto only averages 40 AU from our sun and would probably seem balmy at negative 220 degrees Celsius by comparison to an object 1 AU from Barnard's Star.

Our sun would put on a much better show. Viewed from Barnard's Star it would be a first-magnitude star in the constellation Monoceros, about as bright as Pollux appears from Earth.

Despite its dim appearance, this star has a few tricks up its sleeve. In 1998 a flare was produced by the star. It had a temperature of 8000 degrees Kelvin, twice the normal temperature of the star. Sun spots seem uncommon though and only one possible spot was detected during 130 days of observations in 1998.

This small red dwarf star's main claim to fame is that it has the largest proper motion through the sky of any object relative to our sun. At about 6 light years distant, it is the 4th closest star to ours with only the three star Alpha Centauri system coming closer. And Barnard's Star is coming even closer!

Its proper motion through the sky is 10.3 arc seconds per year so its travel throughout a human lifetime will take it about ½ the diameter of the full moon. It is traveling in our direction as well and in about 10,000 years it will reach its closest point to



us at 3.8 light years. While at this closer distance to us it will appear brighter, it will still require optical aid to be seen at magnitude 8.5. It will also still not be the closest object to our sun – Proxima Centauri will continue to hold that distinction.

As one might expect, it is tempting to look for planets around this nearby object. So far, however, none have been found. It remains a search target for future missions though, as even though a large planet has been ruled out by current detection methods, new technologies hold out hope for a future smaller planet discovery.

Thank you for your interesting lecture Bob – as a skilled and long-term observer of our closest star, we hope to see you back for our solar prominence lecture in March.

Claire Stover

References:

Columbia Memorial Space Center

<http://www.columbiaspacescience.org/>

http://en.wikipedia.org/wiki/Barnard's_Star

Barnard's Star's Motion

<http://commons.wikimedia.org/wiki/File:Barnard2005.gif>

Star Size

http://commons.wikimedia.org/wiki/File:Barnard%27sStarSize_fr.jpg

What's Up? Aliens From A Nearby Galaxy?

In science fiction stories, aliens often proclaim that they "come from a nearby galaxy." For astronomers this seems to be a joke, the close Sagittarius Dwarf Galaxy (NGC 6822) is a million light years away. That's a long way for any alien to travel. This telescopic object, discovered by E. E. Barnard in 1881, is one of a dozen satellite dwarf galaxies near our Milky Way. They include the more visible Large and Small Magellanic clouds, first charted by the explorer Magellan when he daringly sailed south in the 1500's. Like dwarf planets and dwarf stars, these shapeless dwarf galaxies are numerous in the universe, never getting the attention of their giant spiral neighbors. Or course, the Small Magellanic Cloud isn't small, it's 20,000 light years across.

All these "nearby" galaxies belong to the Local Group, a term coined by Mount Wilson astronomer Edwin Hubble in his 1936 book "The Realm Of The Nebulae". There are over 30 galaxies in the Local Group, most of them Dwarf Galaxies. It was Hubble who first proved that known "spiral nebulae" were actually enormous groups of stars like our own Milky Way. He studied the closer dwarf galaxies and the Andromeda Galaxy to determine their distances. It was then he developed Hubble's Law stating that the more distant a galaxy is, the faster it is moving away from our galaxy. This defines the mysterious expansion of the universe, and makes it harder for aliens to take intergalactic journeys.

Sometimes those aliens say they're from the Andromeda Galaxy (M31) some three million light years away. Perhaps this is because it's most distant object that can be seen by the unaided eye. In a telescope it reveals dwarf companions of its own (M110 and M32). Studying the Andromeda Galaxy is like studying our Milky Way Galaxy, both are about 100,000 light years across. The earliest mention of M31 is by a Persian astronomer in 905 AD who called it a "little glowing cloud" Another giant spiral, M33 in Triangulum is also faintly visible without a telescope.

The Local Group is part of a larger Local Super Cluster of Galaxies often called the Virgo-Coma Cluster. This area is at the north pole of our Milky Way Galaxy where we can clearly gaze out into intergalactic space. Here the closest galaxies are Virgo (Virgin), a constellation mythologically associated with

Spring awakening. Her brightest star is Spica (a spike of wheat seeds), a giant star 2,300 times brighter than our sun. This Spring, the planet Saturn also shines brightly in Virgo. Star charts will locate dozens of brighter Messier galaxies while hundreds (thousands if you have a huge telescope) of even fainter ones lie beyond. Beneath Leo's form lie two groups of three galaxies, Trios in Leo. Near Corvus (Crow) is the much photographed Sombrero Galaxy and the colliding Antennae Galaxies. Many famous galaxies like M81 and M82 lie to the north in Ursa Major (Big Bear). Coming south to the constellation of Canes Venatici (Hunting Dogs) there is M51 (Whirlpool Galaxy) which interacts with NGC 5195. It was the first to be recognized (in 1845) as having a spiral shape. But the greatest concentration of galaxies for amateur telescopes lies between the constellation of Coma Berenices (Berenice's Hair) with its hairy open star cluster (Melotte 111) and Virgo. The odd idea of Berenice's Hair comes from a story of Queen Berenice of Egypt who cut off her famous locks and laid them on Aphrodite's altar as an offering to the gods to bring back her husband king from war. Here is the popular M64 (The Blackeye Galaxy) with its dark bruise. Further south galaxies are so close together, one group called Markarian's Chain can be trailed from M88 to M84.

Besides spiral galaxies there are elliptical galaxies, thought to be older galaxies that have lost their arms. About 20 percent are elliptical, 75 percent spiral, and 5 percent irregular. There are also rare Seyfert spiral galaxies characterized by an exceptionally bright nucleus. These were discovered by Carl Seyfert at Mount Wilson in 1943.

Our own Milky Way Galaxy is spiral shaped. Our sun was once thought to be at the center of our galaxy. But now it's recognized to be out in the suburbs, located in one of the four spiral arms, called the Orion Arm.

Recently, Hubble Space Telescope photos have produced distant galaxies far back in time. The current number of known galaxies is near fifty billion. With billions of stars in each galaxy that's a lot of stars and planets for alien life forms to live on. However, travel from one galaxy to another is something that probably only happens science fiction stories.

Lee Collins

Motion of Bernard's Star Over Twenty Years



March Star Party

Our March star party was held at Mojave River Forks Regional Park, south of Hesperia. In attendance were Jim Bridgewater, Frank and Barbara Busutil, Bill Connelly, Ken Crowder, Joe Hillberg, Ron Hoekwater, Laura Jaoui, Claire Stover, Gary Thompson and son, and our two new members.

Shortly after the sun went down Venus popped into view. The seeing was not real steady close to the horizon, but there is not much to see on Venus anyway. Later we looked at Mars and then the Orion Nebula and some of the brighter deep sky objects. Frank had his camera hooked up and was showing us some great images on his monitor.



Joe brought his new 127mm Explore Scientific APO refractor.

What a treat it was to look through. He was using it to splitting some double stars.

Claire brought out a club loaner scope, the baby blue 8-inch dob. PVAA has loaner scopes available for members to borrow. If you would like to check one out talk to me at the next meeting.

Laura had her 8-inch Orion dobsonian and Gary had his 13.1-inch Coulter Odyssey. A lot of people got started in this hobby with Coulter telescopes. They were a great bargain, big aperture and a modest price. I once had a 13.1-inch Odyssey myself. Bill had his 12-inch Meade Lightbridge, a nice size and it breaks down easily to fit in a car.

A little before midnight the high desert temperature convinced everyone that they would like head off to someplace a little warmer, their own bed. That is one of the good things about this site, it is only about an hour from home.

Our next star party is April 10th at Cottonwood Springs. I hope many of you can make it.

Ron Hoekwater



Club Events Calendar

**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 20, Star Party - Ontario Library, Main Branch 7-9 PM

**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 - Dr. Rachael Akeson
on Finding Planets Through Transits**

September 4, Star Party

September 16, Board Meeting

September 24, General Meeting

October 9, Star Party

October 12, Star Party - Ontario Library, Main 7-9 PM

October 14, Board Meeting

October 22, General Meeting

November 6, Star Party

November 11, Board Meeting

November 19, General Meeting - Gene Serabyn of JPL

