



For my part I know nothing with any certainty,
 but the sight of the stars makes me dream.
Vincent Van Gogh

Newsletter of the Pomona Valley Amateur Astronomers

Volume 36 Number 1

nightwatch

January 2016

President's Message

Happy new year, everyone! A new year always brings new things, and this one is no exception.

In space exploration, NASA's Juno orbiter will arrive at Jupiter on July 4. This will be our first Jupiter orbiter since Galileo was de-orbited in 2003. The OSIRIS REx probe will launch in September to visit a near-Earth asteroid in 2018 and hopefully return a sample of it to Earth. ExoMars 2016, a joint project of the European Space Agency and Russia's Roscomos, will depart for the red planet this year, with an orbiter and lander. With any luck, ExoMars 2018 will be along a couple of years later with a rover.

For earthbound observers, the big news this year will surely be the transit of Mercury across the face of the sun on May 9. Mercury transits are not as rare as the more famous transits of Venus, but they still only come around once or twice a decade

on average. The last Mercury transits before this one were in 2003 and 2006, and the next two after this year will be in 2019 and 2032. Hopefully we'll have clear skies for it - this will be a good opportunity to test gear and practice safe solar observing before next year's total eclipse.

Comet Catalina is fading in the predawn skies. I caught it a couple of times in binoculars in December, but so far clouds, cold, and laziness have kept me from catching it in 2016. I love a good comet - I hope 2016 brings us at least one more.

Our speaker this month is Bill Little, a member of the Planetary Society, who will speak on the impact that the space program had on his life, and his quest to visit all of the Apollo era command modules. I hope to see you there.

Matt Wedel

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Club Events Calendar

January 22, 2016 General Meeting

January 27, 2016 Bear Gulch Elementary Star Party 5 PM

February 6, 2016 Star Party--Anza Borrego State Park

February 11, 2016 Board Meeting

February 19, 2016 General Meeting

March 5, 2016 Star Party--Cottonwood Spr, Joshua Tree

March 17, 2016 Board Meeting

March 25, 2016 General Meeting--Geo Somoza, Light Sail

April 9, 2016 Star Party--Kelso Dunes

April 14, 2016 Board Meeting

April 22, 2016 General Meeting

Bear Gulch Elementary School Star Party

The last two years we were rained/clouded out. This year the moon is a few days past full and there are no planets, so deep sky objects will have to do! This event is usually well-attended.

Location of the school is a bit North East of the Vineyard and Arrow Hwy intersection. I'll be setting up scopes and bringing meteorites to display. We would love to have some large telescopes out on the back playground for night sky viewing. This is an educational, family fundraising event that encourages parents and students to learn more about astronomy in a fun and engaging way. We will have many space related activities in classrooms and in our outdoor quad area.

Date: Wednesday, January 27, 2016

Time: Set-up 5:00-5:30

Event 5:30-8:00

Clean up 8:00-8:30

Bear Gulch Elementary
8355 Bear Gulch Place
Rancho Cucamonga, CA 91730

Contact: Keri Applegate, Principal
(909) 989-9396

Jeff Schroeder

The Loneliest Galaxy In The Universe

Our greatest, largest-scale surveys of the universe have given us an unprecedented view of cosmic structure extending for tens of billions of light years. With the combined effects of normal matter, dark matter, dark energy, neutrinos and radiation all affecting how matter clumps, collapses and separates over time, the great cosmic web we see is in tremendous agreement with our best theories: the Big Bang and General Relativity. Yet this understanding was only possible because of the pioneering work of Edwin Hubble, who identified a large number of galaxies outside of our own, correctly measured their distance (following the work of Vesto Slipher's work measuring their redshifts), and discovered the expanding universe.

But what if the Milky Way weren't located in one of the "strands" of the great cosmic web, where galaxies are plentiful and ubiquitous in many different directions? What if, instead, we were located in one of the great "voids" separating the vast majority of galaxies? It would've taken telescopes and imaging

technology far more advanced than Hubble had at his disposal to even detect a single galaxy beyond our own, much less dozens, hundreds or millions, like we have today. While the nearest galaxies to us are only a few million light years distant, there are voids so large that a galaxy located at the center of one might not see another for a hundred times that distance.

While we've readily learned about our place in the universe from observing what's around us, not everyone is as fortunate. In particular, the galaxy MCG+01-02-015 has not a single known galaxy around it for a hundred million light years in all directions. Were you to draw a sphere around the Milky Way with a radius of 100 million light years, we'd find hundreds of thousands of galaxies. But not MCG+01-02-015; it's the loneliest galaxy ever discovered. Our Milky Way, like most galaxies, has been built up by mergers and accretions of many other galaxies over billions of years, having acquired stars and gas from a slew of our former neighbors. But an isolated galaxy like this one has only the matter it was born with to call its own.

Edwin Hubble made his universe-changing discovery using telescope technology from 1917, yet he would have found absolutely zero other galaxies at all were we situated at MCG+01-02-015's location. The first visible galaxy wouldn't have shown up until we had 1960s-level technology, and who knows if we'd have continued looking? If we were such a lonely galaxy, would we have given up the search, and concluded that our galaxy encompassed all of existence? Or would we have continued peering deeper into the void, eventually discovering our unusual location in a vast, expanding universe? For the inhabitants of the loneliest galaxy, we can only hope that they didn't give up the search, and discovered the entire universe.

Ethan Siegel

This article is provided by NASA Space Place.

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Image credit: ESA/Hubble & NASA and N. Gorin (STScI); Acknowledgement: Judy Schmidt, of the loneliest void galaxy in the known: MCG+01-02-015.