

“Neptune in Opposition”

by Karel Benovy, Docent, Cameron Park Rotary Club Community Observatory

For lovers of astronomy in the Foothills, it doesn't get much better than summer here. The nights get longer and warmer. The spring rains go away, leaving us with a stunning backdrop of celestial gems to admire and explore.

And this summer, we have a special visitor making an appearance. Neptune is currently making its transit through Aquarius. As a matter of fact, today (August 22) Neptune is at opposition to the Sun. This means Neptune and the Sun are on opposite sides of Earth, as Earth passes between them.

What this also means for us is that Earth is the closest to Neptune that it will be during our approximately 365.25 day orbit around Sol. So Neptune is at its brightest for the year as well, due to our closeness.

As near and bright as it is, this doesn't mean Neptune will be visible without aid from a telescope. Even at its closest Neptune is almost 2.7 billion miles away from us. That's....well, really far away. So through a moderate 14 inch diameter telescope it will appear as a small, soft blue-green disc. Through my ten inch diameter telescope, it is a tiny pale blue dot. But for treasure hunters like me who love the challenge of discerning the soft blue disc from the sparkling stars around it, Neptune is all the reward you want and more. If you want to catch a glimpse of this beautiful blue planet, this week is the best time.

As you're peering at Neptune through a telescope, you may also want to whisper “happy anniversary”. This summer, Neptune completed its first 164.8 year orbit around the Sun since it was officially discovered on September 23, 1846. In honor of this anniversary the Hubble took some stunning photos of Neptune in June. An internet search for those Hubble photos will bring up pictures of Neptune with beautiful high altitude clouds of methane ice crystals which are not typically visible.

The discovery of Neptune was an exciting event 165 years ago. It was the first planet whose location was *predicted* before the planet was even discovered. The prediction was based on gravitational perturbations on the orbit of Uranus. In other words, Uranus wasn't travelling in its orbit the way it was supposed to, so scientists knew there was something nearby massive enough to have a gravity that would affect the orbit of Uranus. They were right.

And Neptune *is* big; almost four times the diameter of Earth and even more massive than Uranus. It's one of four gas giants in our solar system complete with its own set of rings, the fastest winds on any planet, its own Great Dark Spot, 13 moons, and a beautiful blue hue which results from absorption of red light by methane and other chromophores in its atmosphere. In case you are wondering, a chromophore is the part of a molecule responsible for its color. The color arises when a molecule absorbs certain wavelengths of visible light and transmits or reflects others.

So come on out to the Cameron Park Rotary Club Community Observatory for a look at Neptune and other celestial wonders this summer. It's always free and open 8:30-10:30 pm, Fridays, Saturdays, and Sundays when it's not cloudy. To see whether we're open, go to www.communityobservatory.org and click on the OPEN/CLOSED status bar on the left of our home page...or you may call the observatory at (530) 344-5707 for a recorded message. We also hope you will “Like” the Cameron Park Rotary Community Observatory on Facebook. See you under the stars soon!