

Temecula Valley Astronomer

The monthly newsletter of the Temecula Valley Astronomers

July 2014

Events:

June 28, 2014 (Saturday)
Star-B-Q 4:30 P.M. – Till When Done
Terry & Francis O's home
Anza, CA

Details via E-mail

No regular meeting in July!!



Comet PANSTARRS - 31 May 2014

by John Garrett

WHAT'S INSIDE THIS MONTH:

STAR-B-Q:
by Fran & Terry Ostahowski

COSMIC COMMENTS:
by President Mark Baker

LOOKING UP:
by Curtis Croulet

ART'S NIGHT OUT:
by Art Cobb

Comet PANSTARRS 2012k1:
by John Garrett

**Participating in the National Park Service
Astronomy VIP (Volunteer in Park) Program:**
by Paul Kreitz

General information:

Subscription to the TVA is included in the annual \$25 membership (regular members) donation (\$9 student; \$35 family).

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Star Party Coordinator: John Garrett

Address renewals or other correspondence to:
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Send newsletter submissions to Mark DiVecchio (markd@silogic.com) by the 20th of the month for the next month's issue.

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STAR-B-Q

by Fran & Terry Ostahowski

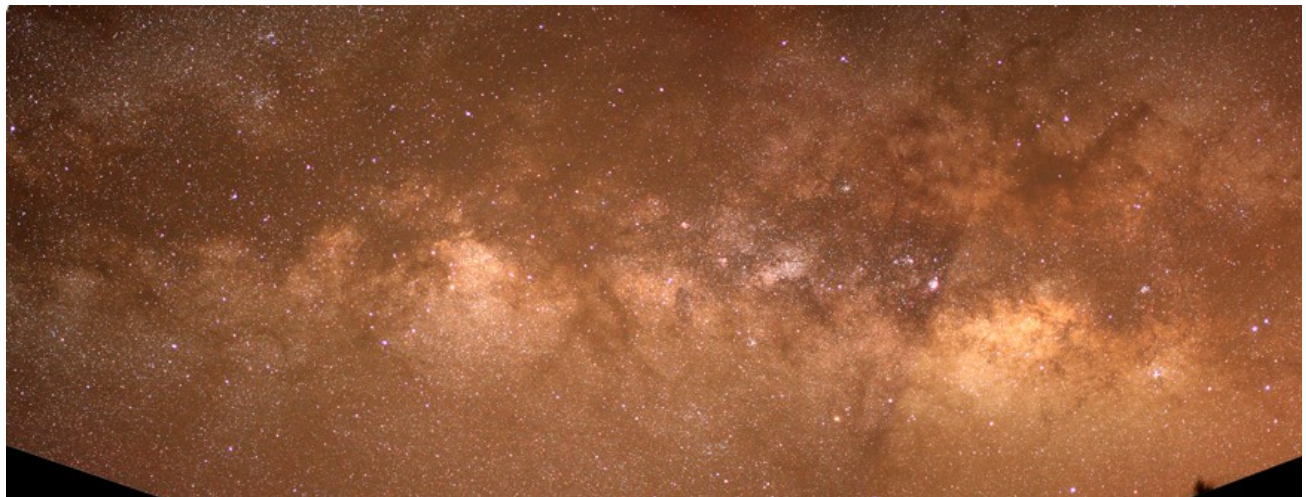
Star-B-Q is the 28th of June, please RSVP (to francesostahowski@gmail.com) so that we can be sure to prepare for the appropriate amount of people.

Please include what side dish or dessert you will bring.

The Ostahowski's and the TVA will provide the paper products, hamburgers, hotdogs, meatballs, with the fixings, popcorn, & ice cream.

Bring your favorite beverage & chairs. Bring friends, family and kids! Bring your telescope.

Check your TVA emails for location & directions.



Milky Way Mosaic by John Garrett

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Cosmic Comments – 07/14 **by President Mark Baker**

A retrospective from last year... same song, same verse!!!

A song came on the other day and a few of its lines really stuck out to me...

“I hope you never lose your sense of wonder...”

“I hope you still feel small when you stand beside the ocean...”

“I hope you never fear those mountains in the distance. Never settle for the path of least resistance...”

And lastly... “Give the heavens above more than just a passing glance, and when you get the choice to sit it out or dance... I HOPE YOU DANCE!!!”

Me personally, I have always had a sense of wonder to the point of driving people crazy some times... and having grown up around the ocean, it never made me feel small BUT the Cosmos always has and always will make me feel insignificant... and I have never had a fear of the “unknown”, in fact have relished the opportunities to unlock secrets when and where I’ve been able to, no matter how stiff the challenge. The easy way out was seldom an option for me... and lastly, I have NEVER been able to just give the heavens a passing glance. Therefore I would never choose to sit it out... and so I DANCE!!

But that is what we all in the TVA do... we DANCE!!! And we partner with each other, our community, but most importantly, with the celestial sphere that encompasses us. What more esthetically appealing dance could there be...??

So thanks to all of those in the TVA for dancing the dance and inspiring others to do the same...

Clear, Dark Skies my Friends...



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Looking Up July 2014 by Curtis Croulet

First Quarter Moon is on July 5 at 4:59 am; **Full Moon** is on July 12 at 4:25 am; **Last Quarter Moon** is on July 18 at 7:08 pm; **New Moon** is on July 26 at 3:42 pm.

Mercury is in the morning sky to the lower left of Venus for most of July after the first week.

Venus is at magnitude -3.8 before dawn.

Mars is in Virgo, still bright, but too small for effective observation in most amateur telescopes.

Jupiter reaches conjunction with the Sun on July 24. It'll be observable only during the first few evenings of July.

Saturn rests in Libra as its retrograde motion (i.e., moving backwards) comes to a halt in July.

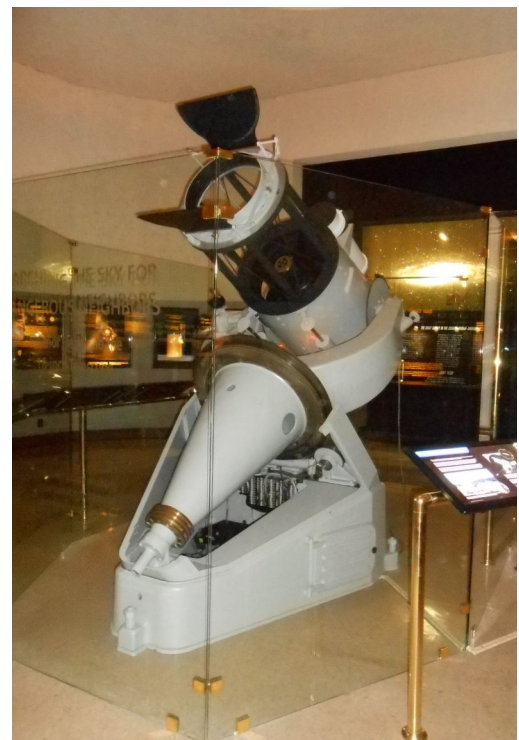
Uranus and **Neptune** are still post-midnight objects. They're in Pisces and Aquarius, respectively.

Pluto is in Sagittarius at magnitude 14.1. It reaches opposition July 4. To see Pluto, you'll need a very dark sky and an 8-inch or larger scope. Even with this equipment, your biggest challenge will be identifying it in a busy Milky Way star field. You can find a useful finder chart in the June 2014 issue of *Sky & Telescope*, p.50.

Let's look up.

If you haven't visited Palomar Observatory for awhile, you've missed an important new exhibit. The pioneering 18-inch Schmidt camera, idle and in storage for many years, is now enclosed in a new exhibit in the Addison White Greenway Jr. Visitor Center at Palomar. The 18-inch Schmidt exhibit is named for the late Eleanor Helin, who used this telescope for a number of years to search for asteroids.

A Schmidt camera is a telescope specifically designed for photographing enormous areas of the night sky. The telescope uses a large spherically-figured primary mirror, coupled with a special corrector lens at the aperture end of the telescope. A Schmidt camera brings the image to a focus deep inside the telescope. The image can be photographed with film or with a glass plate, or it can be imaged with a CCD array.



Helin Exhibit

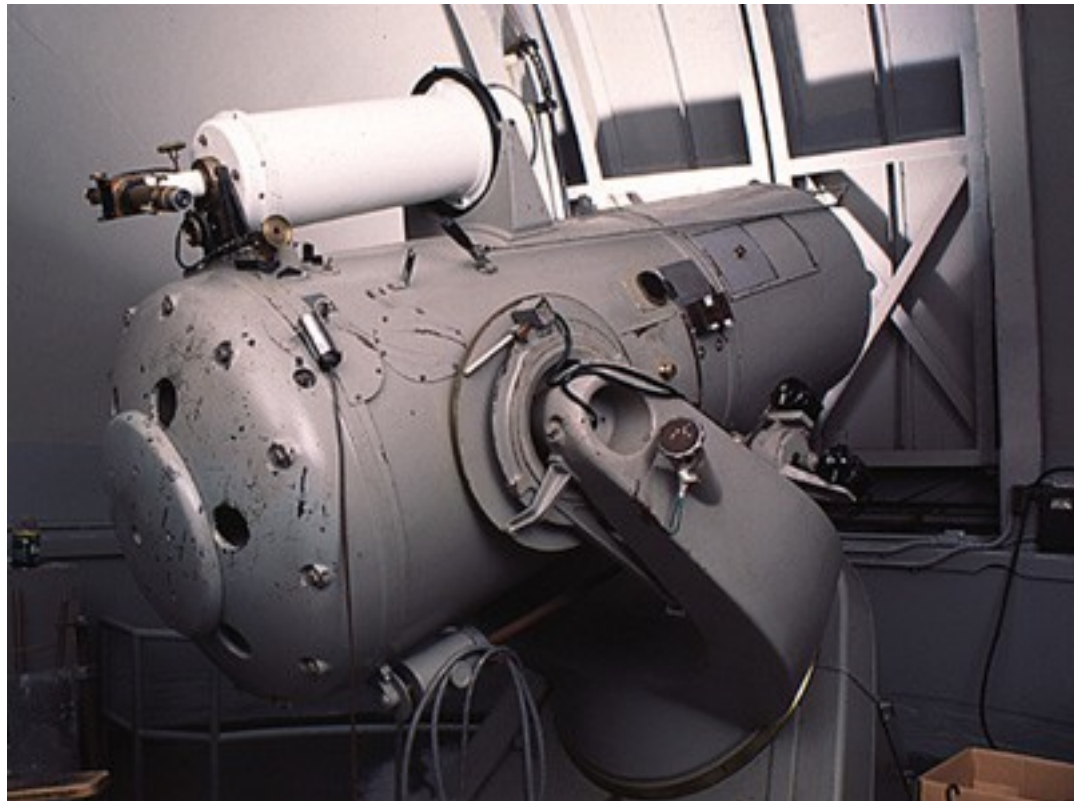
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There's no way to view the image through an eyepiece. The focal plane is curved, and the film or CCD array must therefore also be gently curved in a special holder.

The Schmidt camera design was invented by the Estonian (but ethnically German) optician Bernhard Schmidt (1879-1935). The 18-inch Schmidt at Palomar Observatory was installed in late 1936. The German astronomer Walter Baade, who played an important part in the history of both Mt. Wilson and Palomar observatories, knew Bernhard Schmidt. Baade strongly recommended the construction of the 18-inch. The 18-inch at Palomar wasn't the first Schmidt camera, but it was one of the first at a major observatory. Probably the most famous of all Schmidt cameras is the Samuel Oschin Telescope (aka "48-inch Schmidt") at Palomar Observatory. That telescope was put into operation in 1948, and it has been an important part of research at the observatory up to the present day.



18-inch Schmidt Telescope at Palomar Observatory (photo used with permission - Caltech/Palomar Observatory)

Amateur astronomers know the Palomar 18-inch Schmidt as the instrument used by Gene and Carolyn Shoemaker and David Levy to discover Comet Shoemaker-Levy 9 in 1993. The comet struck the planet Jupiter in July 1994 (almost exactly 20 years ago by the time you read this). But it was previously used for many years by the Bulgarian-born Swiss astronomer Fritz Zwicky (1898-1974).

Fritz Zwicky was considered by many of his colleagues to have an, um, challenging personality. He was particularly famous for collectively referring to other astronomers as "spherical bastards." They were "spherical" because they were "bastards when looked at from any side." In his later years, Zwicky challenged the orthodox explanation of quasars as being extremely brilliant objects at tremendous distances. Zwicky referred to them as dwarf compact galaxies. He disputed their red-shifts as being accurate indicators of their true distances.

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But Fritz Zwicky was one of the giants of astrophysics. His name belongs in the pantheon of the greatest astronomers and astrophysicists of all time. Before coming to Caltech, Zwicky studied the motions of galaxies in the Coma Cluster. He realized that the visible matter in the galaxies (stars, gas clouds) could not account for the galaxies' motions. They were moving around the center of the cluster much, much faster than would be the case if their visible matter were all that there is. Zwicky estimated that 90% of the matter in the Coma Cluster was invisible. Thus was born the concept of "dark matter." These days, studies of dark matter are all the rage, even though we still don't know what it is. But in 1933, when Zwicky published his discovery, he was ignored.



Fred Zwicky (photo used with permission - Caltech/Palomar Observatory)

Zwicky also developed the idea of the "supernova." Before the 1930s, all stars that suddenly became extremely brilliant were simply "novae" (or "novas"). Zwicky proposed the existence of neutron stars, and he and colleague Walter Baade coined the term "supernova" to identify those exploding stars that would eventually become neutron stars – which hadn't yet been discovered in 1934, when Zwicky and Baade published their ideas. It wasn't until 1967 that the first neutron star was discovered (the star at the center of the Crab Nebula). As if that weren't enough, Zwicky also proposed the idea of "gravitational lensing," whereby the mass of a galaxy cluster can bend the light of more distant galaxies to make them visible. It was several decades before there was observational proof of gravitational lensing.

All of this brings us back to the 18-inch Schmidt camera at Palomar. Fritz Zwicky used the 18-inch extensively to search for supernovae. This was long before the automated surveys that now discover most supernovae. Zwicky discovered 120 supernovae in his lifetime, although, I must confess, I haven't been able to determine how many of them he discovered with the 18-inch Schmidt.

The 18-inch Schmidt fell into disuse a few years ago. It lay in pieces in an out-of-the-way storage area at Palomar Observatory. You can now see it, beautifully restored, in the Visitor Center at Palomar.

Clear skies.



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Art's Night Out

by Art Cobb

Article 149 July 2014

Happy birthday America! It is July again and we are well into our summer months. I love this time of year, especially for viewing our heavenly bodies. This time of year the "Milky Way" band of stars becomes more and more massive and very visible. As you look into the southern sky area, you'll see a nice bright glow of stars that extends upward and over the sky into the northern horizon. You'll see that the bulk of the brightness is in the southern most area of this band. The brightest section is actually the core area of the "Milky Way Galaxy". Our earth is located out into one of the arms of the galaxy. What you are seeing as you look at the "Milky Way" band of stars is as you are looking through the arm of stars leading into the core of the galaxy. Looking away from the 'band' of stars pulls our view out and away from the 'arm' of stars in the "Milky Way Galaxy". Once again, the "Milky Way" is a great area to use a pair of binoculars and view beautiful dense star areas. You can see numerous open star clusters, nebulae and globular clusters, by using a pair of binoculars in a fairly dark sky area.

High up in our eastern sky in this band of stars is a constellation called Cygnus. If you are facing east, Cygnus will be up from the horizon almost half-way to the Zenith point of our overhead sky. Cygnus contains a very common 'asterism'. A reminder: an 'asterism' is a group of stars forming a familiar object. The 'asterism' in Cygnus is the "Northern Cross". There are five main visible stars forming what looks like a "cross". The 'top' star of the cross, facing north, is Deneb or Alpha. The eastern side star of the cross bar of the cross is Epsilon. The right side or western crossbar star is Delta. The middle star of the crossbar is Gamma. And, the bottom star, facing south, is Albireo or Beta.

Let's focus upon Albireo to begin our viewing. Starting with a pair binoculars (if you have one), you should be able to see that this star is actually two stars. This is called a 'double star' or 'binary star system'. One of the two stars is known as the 'primary star' and rotates along the same path in our sky. The other star is the 'secondary star' and rotates around the primary star. Both of these travel together in the same direction through our galaxy. By using a pair of binoculars, you may or may not notice Albireo's two stars are two different colors. Using a small to moderate sized telescope, should bring out the colors of these two stars. One appears to be a nice gold color and the other a bright blue. Depending upon the atmospheric conditions, the colors can vary slightly. The 'gold' may appear to be more of an orange at time. This 'double star' is one of the prettiest in our sky.

A challenge in viewing 'double stars' is seeing the gap between the two stars. Albireo is easily 'split', even using binoculars. There are hundreds of 'binary star systems' visible in our night sky. A good star guide will help you locate many of these 'double stars'.

Okay, now for an "open star cluster". Look back at star Deneb again. That is the top star of the cross facing north. Continue looking towards the north out about 8 degrees (three finger

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widths) and to the east about 3 degrees. In this area is a nice, fairly large, open cluster called M-39. This again is a nice binocular view.

Cygnus has a few visible 'nebulae' to view. As I have mentioned before, nebulae are best viewed using a 'nebula filter'. I use an O-III filter. The nebula filter blocks out certain wavelengths of light which enhances the faint gases found in these nebulae. Practically, you'll see more of the haze or clouds created by the gases in the nebula.

Look at Deneb again. Now look just east or left of this star. In this area, you'll find the "North America Nebula". This is fairly large and can be seen in dark sky areas. This is easily seen using a 'nebula filter'. Small scopes at low power can give you the best view of this nebula. The gaseous nebulae appear as white hazy clouds. When photographed or captured using CCD cameras, color will become evident. So, usually when looking at books, any color depicted is a result of film or digital media.

Now let us look at two more beautiful nebulae. Find star Epsilon again. This is the western side or tip star of the cross-bar. If you look east about 3 degrees to 4 degrees from this star, you will be in the area of one of these two nebulae. Both will appear as elongated veils; thus the name "Veil Nebula" as been assigned to both of these. NGC6992 is the nebula straight out from star Epsilon. NGC6960 is the nebula due south from NGC6992 about 1 degree. To see these without a nebula filter will require a moonless, clear dark sky. I have seen these from Anza using both my 6" Cassegrain and my 4.5" refractor. Once again, these are best viewed using a nebula filter. The darker the sky, the more of the beautiful veil you'll see.

There is one more open star cluster that can be seen using a pair of binoculars and small scopes. Find star Gamma again at the center star of the cross-bar. Now look s/e of this star about 2 to 3 degrees. Here you should see a nice little cluster of stars that are set apart from the remaining mass of stars in this part of the "Milky Way" band of stars. This cluster is M-29, and looks pretty good through a small to medium size telescope at low power.

I'll save a couple more objects near Cygnus for next time. Enjoy your evenings of viewing.

Until the next time, Art



Comet PANSTARRS 2012k1 by John Garrett

One difference between amateur astronomers and the general public is that we amateur astronomers can see a comet any time, where as, the general public sees a comet only when a bright one approaches. ISON left me disappointed, but PANSTARRS 2012k1 has some potential for good images.

On the evening of May 31, I took three- to five-minute exposures of the region between Ursa Major and Leo, hoping to catch PANSTARRS. I used a 28mm lens at f2.8 and ISO 400. To my surprise, the comet showed up as a 9th to 10th magnitude green splotch.

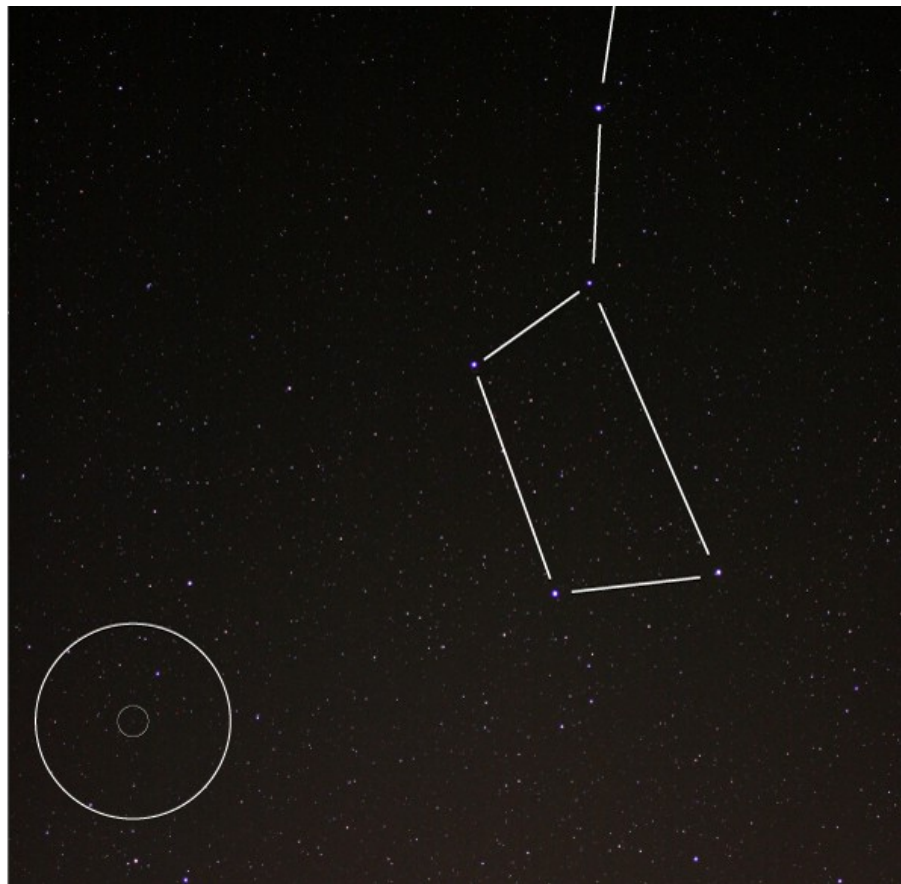


Figure 1: PANSTARRS in Ursa Major

The small circle in Figure 1 identifies the comet PANSTARRS 2012k1 on May 31, 2014; the larger circle is the field of view shown on the next page.

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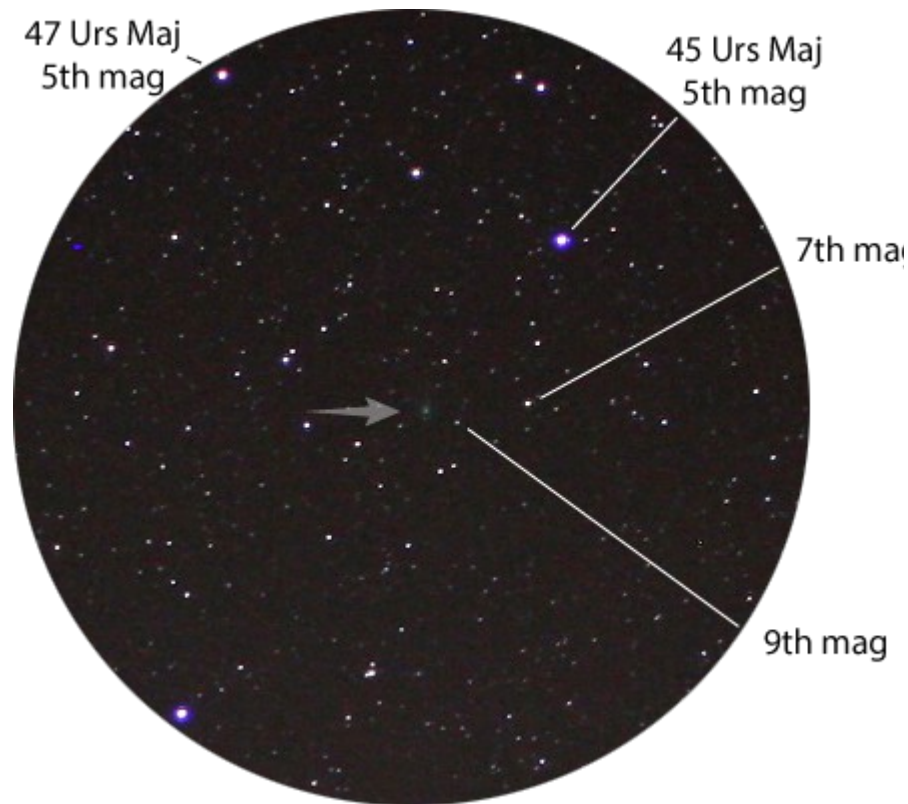


Figure 2: Full resolution cutout from Figure 1 showing PANSTARRS (arrow)

In Figure 2, I identified the magnitudes of nearby stars. The green glow of PANSTARRS is slightly dimmer but more diffuse than a nearby 9th magnitude star.

Using Heavens Above (<http://www.heavens-above.com>), I identified the locations of PANSTARRS during the last weekends in June (which are ideal for observing and imaging the comet).

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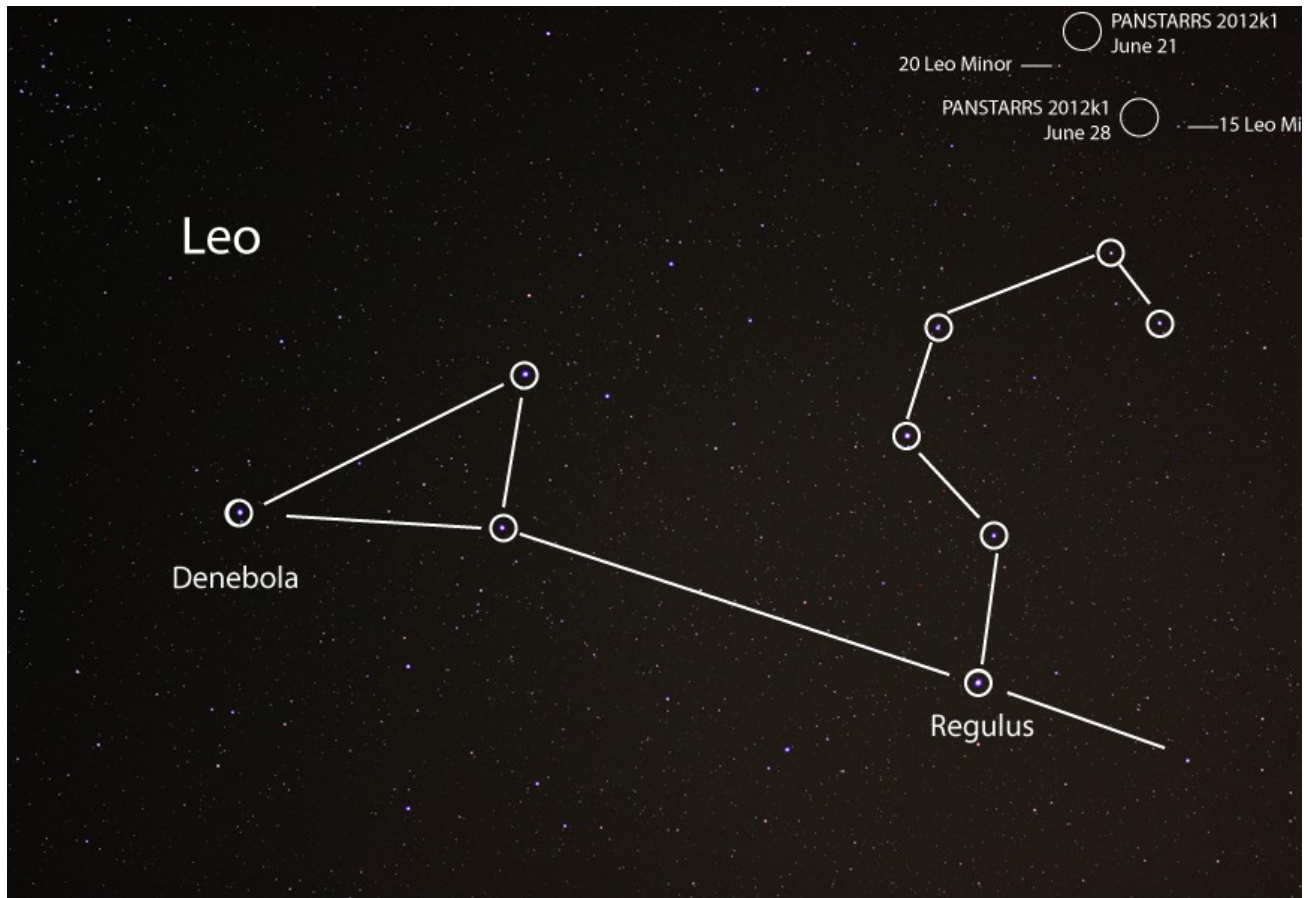


Figure 3: PANSTARRS in Leo

Happy comet hunting.

(NOTE: High quality images are available online at this location:

<http://www.brightstarswildomar.blogspot.com/2014/06/comet-panstarrs-2012k1.html>)

John



Quiz

Why do clocks run clockwise?

If you know the answer (without Googling it!) post it to tva@mrh.org.

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Participating in the National Park Service Astronomy VIP (Volunteer in Park) Program By Paul Kreitz

I came across a business-card sized advertisement in the December, 2009 issue of Sky and Telescope inviting interested persons to apply for a role as an Astronomy Volunteer at one of a number of designated Dark Sky Parks within the National Park System. I followed the link they referenced in the ad (<http://www.nature.nps.gov/air/lightscapes/astrovip/>), filled in and submitted an application, and eventually found myself assigned to the program at Badlands National Park in South Dakota.

My first reaction to that assignment was something like “Darn, why couldn’t we go somewhere interesting?”. After spending a little time in the Badlands, that changed to “Wow, isn’t it great that we came to the Badlands!”

Badlands is one of over a dozen National Parks and National Monuments across the country participating in the Dark Sky Parks program. The primary criterion for participation is that the Park has a truly dark sky, with light pollution a very small fraction of what we experience in urban Southern California. Badlands certainly fits that criterion! On moonless nights we could clearly see the Milky Way, in all its glory, from horizon to horizon, glowing in the north northwest, through Cygnus, and extending well past Sagittarius to the southeastern horizon. I have seldom seen the Milky Way so clear and extensive!

I had been prepped by Ranger Larry Smith in advance of our arrival as to what our typical day would comprise. I looked at the list of activities and said to myself “Ah, he has padded the schedule to document that we are putting in a full 32 hours for the week”. 32 hours per week is the commitment as a volunteer in order to receive free housing and a “stipend” towards the cost of meals, etc. I was wrong. We did all of the tasks on Ranger Larry’s list and then some.

My typical day as an Astro VIP started at 2:30 in a work room at the Visitor Center, checking the Internet for what’s up tonight (Iridium flare? ISS flyby? Anything else extraordinary?), printing out sky maps for tonight’s program, and checking the Clear Sky Clock web site for what tonight’s visibility would be. A bit before 3:00 we carried equipment outside the Visitor Center for a “Sun Fun” program. We had a 40mm Coronado SolarMax mounted on an Ioptron SmartStar MiniTower tracking mount, plus a SunSpotter solar image projector and various other examples of solar activity. These included “solar beads” which change color from ivory to various pastels when exposed to ultraviolet light, and a “Radiometer” which has four vanes inside a partial vacuum bulb which spin faster or slower depending upon how much radiation they are receiving from the Sun. We typically had between 100 and 200 visitors stop by the Sun Fun between 3:00 and 4:00.

Between the 4:00 end of Sun Fun and 5:00 we would cool off from the hour in the hot July afternoon, and finish any other Internet preparations for tonight’s program. From 5:00 to 7:00pm we manned the Visitor Center information counter. That was one of the activities I

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thought Ranger Larry had included in his list as time-fillers. Wrong. Manning the desk was actually a very enjoyable activity, providing lots of opportunities to interact with visitors in a non-astronomy mode. We did often include a "Don't forget the Astronomy Program at the amphitheater tonight!" as a part of that interaction. I particularly enjoyed checking children's work in their "Junior Ranger Program" booklet, then swearing them in as Badlands Junior Rangers, and presenting them with their genuine gold-colored plastic Junior Ranger badge,

After shutting down the Visitor Center at 7:00, we took about an hour for dinner, then headed over to the Amphitheater to set up for tonight's program. The arrangement here was one factor that sets Badlands apart from other parks participating in the program. The Amphitheater is a newly built (2006) outdoor facility consisting of seating for about 160 persons, plus a huge (20+ feet tall) rear-projection screen on the outside of a very large storage and equipment room. We had a Celestron C11, a Celestron C6, an Orion 12" Intelliscope, and a Meade 16" Lightbridge, all mounted on Wheely Bars or another type of rolling base. We simply rolled the scopes out, one to each corner of the Amphitheater seating area and dropped down the stabilizing legs to set up the scopes. No unloading from a vehicle or lifting of OTAs was required.

While visitors were gathering for the 9:00 showtime we greeted them, gave them fliers talking about protecting our dark skies (fighting light pollution), and sky maps printed from the www.skymaps.com web site. I tried to chat with as many visitors as time permitted about the program, what they had done in the park so far, what they wanted to do, etc.

At 9:00 Ranger Larry started his program, consisting of a welcome talk, a little information about upcoming activities in the park the next day, a few safety warnings (best not to step on the Prairie Rattlesnakes, they don't take kindly to that), and a "What state are you from?" tour of the entire seating area, followed by a PowerPoint presentation mixing a little Badlands information with a good bit of astronomy information and a strong push for protecting our dark skies by reducing light pollution. A number of OCA member Wally Pacholka's photos of Badlands locations with the Milky Way overhead are featured in this presentation. After getting to know me better he polished and inserted into his program 3 or 4 slides that I designed focused on Jupiter, its proximity due to its closer than normal opposition this year, and where the 4 Galilean Moons would be that night. He would call upon me to present those slides.

We would have a 10 minute or so intermission at the end of the presentation, during which time those who couldn't stay for the viewing portion of the program could gracefully depart. After the intermission, Larry did a tour of the night sky with a green laser (he used one of mine because it was a good bit brighter than the Park Service pointer) identifying constellations and giving some background of the myths behind some of them. The VIPs present would use the intermission and sky tour time to get the scopes that required it oriented and aimed at a starting object for viewing. We tried to check with each other and avoid having three scopes looking at Jupiter at the same time, not always with total success. Viewing went on until the last visitor had no more requests, usually around 11:15 or so. Larry claims that he has stayed at it until 2:00 am, but the latest we were there during my time was about 11:45.

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We did that program 4 days a week; Friday through Monday. Tuesday, Wednesday, and Thursday was our “weekend” when other park Rangers did evening programs focused on the geology, culture, and history of the area. The park is adjacent to the Pine Ridge Lakota Indian Reservation, in fact the “South Unit” of the park is within the Reservation and administered by the tribe. It also is in the center of the historic Homesteading area, where Homesteaders could take title to 160 acres of land for \$18, if they lived on it and demonstrated improvements they had made.

My primary activity with OCA for years had been participating in Jim Benet’s Outreach program, and John Garrett’s Outreach programs with TVA continues that focus. I believe that that participation prepared me very well for the activities at Badlands. We had at least two Astro VIPs at any given time, and usually three. Two of the first three VIPs that I worked with were retired Professors of Astronomy, one from Texas and the other from Michigan. I thought “Gee, Paul, have you gotten in over your head?” These fellows clearly knew much more than I about the physics of astronomy. I soon concluded that my Outreach experience with OCA prepared me just fine for the duties of an Astro VIP at Badlands. Hardly any visitors wanted to know what a parsec is, but many wanted to know how many stars are in the Great Cluster in Hercules or how far away is the Ring Nebula or how powerful is that telescope. My involvement at Badlands has helped to make my participation in OCA and TVA outreaches better also.

The administrators of the NPS Astronomy VIP program try to put inexperienced persons, such as myself, into parks with an established program. My requirement was for a park offering full hookup RV sites for housing, so that we could take our motorhome to live in. Those requirements converged at Badlands, which is how we were assigned there.

My wife Mary Eileen decided that she didn’t want to sit around doing nothing all day while I was busy, so she volunteered to assist at the Visitor Center. She worked the same four days that I did, but earlier in the day. In addition to 2 – 4 hours at the information desk each day she responded to many Internet inquiries for information about the park, “graded” Junior Ranger booklets mailed back to the park by visitors who didn’t have time to finish them during their visit, and a variety of other “back room” tasks that needed doing.

We spent a total of 10 weeks at Badlands, wrapped around a two week trip to Hawaii to celebrate our 50th Wedding Anniversary with our family. We both thoroughly enjoyed the experience, so much so that we returned for the 2011 summer, though for a shorter period of time – about 6 weeks. I strongly encourage any TVA members who have some time available (at least 4 consecutive weeks for most parks) during the summer and enjoy interacting with visitors with little astronomy background other than curiosity to look into this program. The best starting point I know of is the starting point that I used: <http://www.nature.nps.gov/air/lightscapes/astrovip/>. The person you most likely deal with there is Teresa Jiles. Feel free to tell her that Paul Kreitz sent you.

