The Fremont Peak Observer
Bringing Astronomy to the Public

Vol 32 No. 1 Spring 2015

Renew now for 2015. Don't let your membership expire. See page 9 for details.

FPOA: Inspiring & Life-Changing

By Doug Brown

Thanks to your support and involvement, FPOA is inspiring people young and old, and even changing their lives!

"Wait a minute," I can almost hear you thinking, "that statement must just be hyperbole intended to make me feel good about FPOA."

But, as you can see from the following testimonial, it is actually what our customers tell us:

"The experience I had was life-changing. It made me realize that there's more than Earth. It got me thinking and made me have more questions."

That was a direct quote from the trip report of a student in one of Pimol Moth's introductory astronomy classes at Hartnell College after a visit to The Peak last month. Who among us hasn't had the "…more than Earth" realization, and the thoughts that follow, during a contemplative moment looking into the night sky?

As another student wrote about the same memorable evening,

"What I thought about the whole experience was that I'll always remember it, and never forget it, and hope to do it again."

"OK," you might now be thinking, "maybe you aren't using hyperbole, it's the students who are." But, we actually DO know people whom FPOA has inspired to successfully choose a career in astronomy rather than, say, their dad's auto body shop.

Often we connect with them at an early age:

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FPOA Programs 2015

Saturday Evening Programs

Apr 11, 18, 25 May 9, 16, 23
Jun 13, 20 Jul 11, 18, 25
Aug 8, 15, 22 Sept 5, 12, 19
Oct 3, 10, 17

Solar Programs

Mar 21 Apr 18 May 16 Jun 20
Jul 18 Aug 15 Sept 12 Oct 10

Board Meetings

Jan 24 Feb 21 Mar 21 Apr 18
May 16 Jun 20 Jul 18 Aug 15
Sept 12 Oct 10 Nov 14

Special Events

Star–B–Que Aug 15
Member Appreciation Night Sept 12

Please check http://www.fpoa.net/schedule.html for changes or updates to this schedule.

A Great Night at the Peak

By Ric Babcock

Good Day, to all Fremont Peak enthusiast and fellow celestial wonderers. My name is Ric, newly elected member to the Board of this fine society last year and now serving you as the secretary of the Board. I joined FPOA five years ago after leaving South Florida where I was a member of the Southern Cross Astronomical Society, known for the Winter Star Party.

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A Great Night *from Page 1*

When I first joined FPOA, I was asked by Pat Donnelly what was my specialty? I didn't initially understand what he was asking and replied "I just like looking up at all the colors". Now, if I have a following day off from work and skies are favorable for viewing and imaging, you'll find me making reservations to go up and view the skies of the seasons, away from the Auto Mall lights of Salinas.

I made such a trip on the night of March 20th, 2015, as I was aware that at least a couple of friends had made the trek to northern Europe to view the March 21st Total Solar Eclipse. I wanted to take advantage of a clear spring night here in Central California and in Spirit, be with all those that were close to the Arctic Circle preparing and hoping for cloudless skies.

I arrived up on the Peak around 6:30 pm, 40 minutes before sunset, taking that daylight time to set up my mount, scope and camera and make a set of calibration frames as my camera was then oriented in the focuser of my 8 inch Newtonian scope. As I made my frames and insured all other details were met, I glanced up, toward the west, to see the first sight appear in the night sky which was Venus. A month ago, February 22nd, I was with a friend, in this same spot, when the 3 day old crescent moon, Venus and Mars made an exquisite trio.
www.flickr.com/photos/54150936@N02/15989724833/

As I tilted my head and neck back, and slightly over my left shoulder, I saw Jupiter high in the sky and as I returned my gaze, caught the glimpse of Sirius, so I knew it would soon be time to begin my alignment for tonight's viewings. My initial alignment went extremely well using Rigel, Mirfak and finishing on Procyon. As I thanked the gods for a good first time run, I saw the vicinity of an object that I had spent time on last month, the colliding galaxies that make up what's known as the Antennae, (NGC_4038-4039).

I wanted to take full advantage of this windless, dry night so I began my calculations as to how I might sweep my scope and viewing this night, so I looked at the meridian and having just crossed it was NGC 2264, The Christmas Tree Cluster and the Cone Nebula of which I spent a little over two hours on.

A Great Night

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NGC 2264

When I make plans to go up on the Peak, I take provisions and I define a good night as one in which the dawning sunrise forces me to break down and come off the mountain. Having unloaded my equipment out from the back of my car, I'm able to lie down in my car, partake of a snack and review my Sky & Telescope sky map and see what I might view next. At this time of the spring, there is a bit of a gulf looking south between Orion and Monoceros and when Scorpio begins to arise out of the southeast. After all, Orion lies in the plane of the Milky Way looking away from the center of our home galaxy where Scorpio and Sagittarius lie in the plane of the galaxy looking toward its center. The Milky Way's plane is now surrounding me on the horizons and I'm looking perpendicular to the galactic dust which inevitably forms stars. The lack of dust makes way for distant galaxy viewing so as I peer through my sky map, I notice two galaxies very close together in the Virgo Cluster.

NGC 5850 and NGC 5846. Let me go there and spend an hour on it, see what appears!

As I later research, I see that next time, I might try including another galaxy, not far from this image, into my same frame. http://www.almadenobservatory.net/NGC5850/ngc5850.png

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A Great Night *from page 3*

It's about 1:00 am now, and I can see Saturn and the head of Scorpio well above the Southeast horizon. Antares is just visible as it is rising by my line of sight. I've always heard and seen the spectacular colors of the Rho Ophiuchus star forming region, but I've never taken the time to bring out so much of what is available from this object. My map tells me the hydrogen cloud around P-Ophiuchus is known as IC 4604. As the constellation of Scorpio continues to rise, I'll spend some time there.

Great, I did get a little of the nebulosity from IC 4604.

As the year progresses, I'll consider spending a little more time here again.

By now Antares is well above the horizon and my map displays a large amount of nebulosity in this area, let me see what I might find. My star map also shows that the globular cluster Messier 4 is nearby, but my field of view is not wide enough to capture both the Red star Antares and the Globular.

I'm also wondering, in the back of my mind, where the Sun is right now? Is the Moon beginning it's approach to block the Sun from viewers in the Faroe Islands or the Svalbard archipelago in Northern Europe?

It has been a good night and I can sense that all good things will finally come to an end, eventually.

As I view my Sky map for one last object to close this night out, I see penciled in, 'Cat's Paw'.

That's NGC 6334 between Antares and the "stinger" of the Scorpio. An old friend from a few years back, let's see how it looks today.

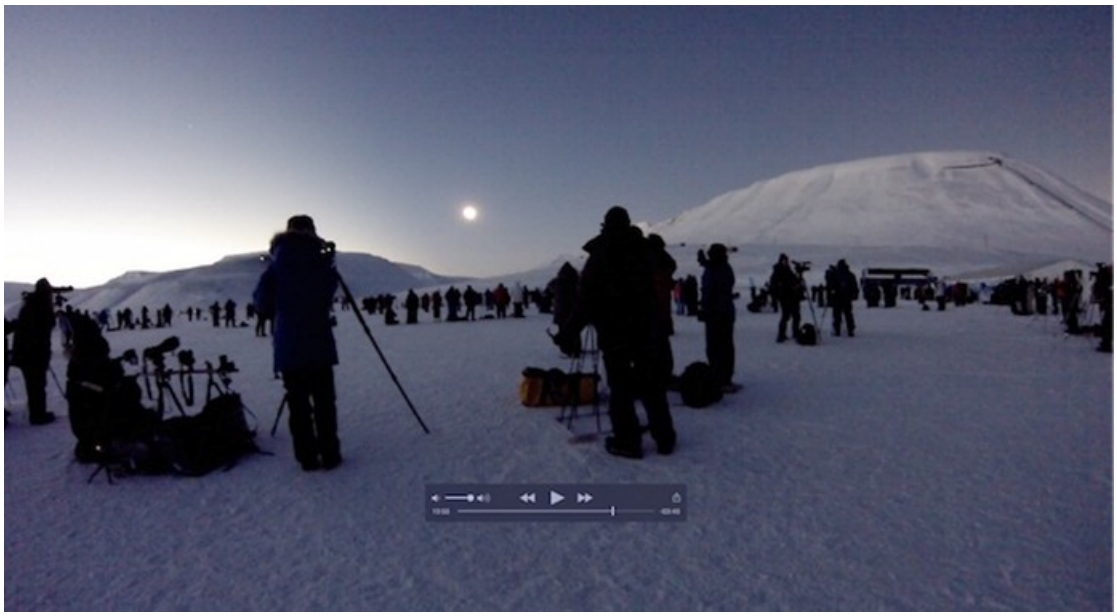
As I zone in on the object, at first taking short duration images to center my image, fatigue from a full night of sky gazing is beginning to takes its toll, but you know, there is something so invigorating when I am handling my telescope and aiming in on another of the multitude of beautiful, Universe-filled objects that are at our disposal to view.

All we lack are non-light-polluted skies and a little magnification, hmmmm.

All images in this article by Ric Babcock.

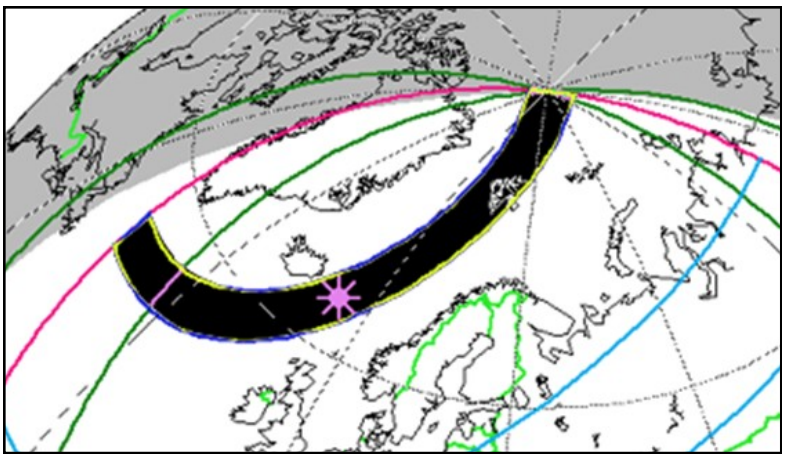
Eclipse Above the Arctic Circle

by Rob Hawley



I have visited many parts of the world chasing the moon's shadow. When I started doing this in 1999 little did I know that I would be watching one from a frozen river above the Arctic Circle.

We were just outside of Longyearbyen, Svalbard. Svalbard is one of the islands of the Spitsbergen Group, which is directly north of Norway at about 78° N. Our site was just off the road to the coal mine southeast of the city.



Capturing an eclipse in such an extreme environment had its own challenges. First is the cold. We were lucky since the day was "warm". It was only -20° C (about 0° F). Had there been wind it would have felt significantly colder. Batteries, motors, and the other apparatus used for astronomy do not like such extreme cold. Our iPhones needed to be kept in waterproof containers next to our bodies. The cameras protected from condensation when we returned.
The figure to the right shows the path of totality.

We were extremely lucky with the weather. A system passed over Svalbard 2 days before. Fortunately our meteorologist said we would only be dealing with local conditions on eclipse day. He was optimistic for a good show.

I awoke to clouds. While I was getting my stuff organized I got a call from a friend. The BBC wanted to interview one of the astronomers. Would I be willing? So at 6:15 in the morning I was squatted on the floor staring into an iPhone and Skyping to the BBC Morning Show in London. Small world.

After that interlude it was back to the matter at hand. I was with the TravelQuest / Discover Magazine trip along with almost 200 others. That number of people required infrastructure. They set up a bus bridge to the hotels, warming huts, but most importantly, secured the best place in the valley to view the eclipse.

We had strict weight limits. To meet them I designed a carbon fiber platform that would hold a tracking mount. Altogether the entire mount weighted 3.5 Kg (another challenge) or just a little more than 2X just the counterweight in EQ-1 I used in other sites.

We got to the site about 8 AM, which was a little over 2 hours before the eclipse was to begin. That gave us plenty of time to set up and to start relaxing before the event actually happened.

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Eclipse

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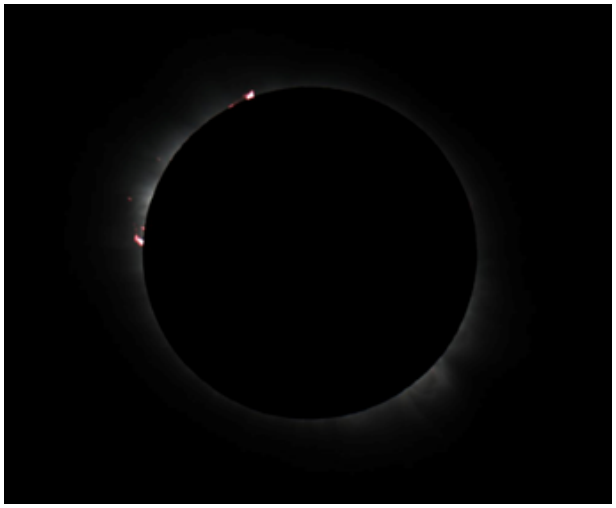
Viewing area from Warming Hut. Eclipse will be in valley to right

Here I am with the dress of the day

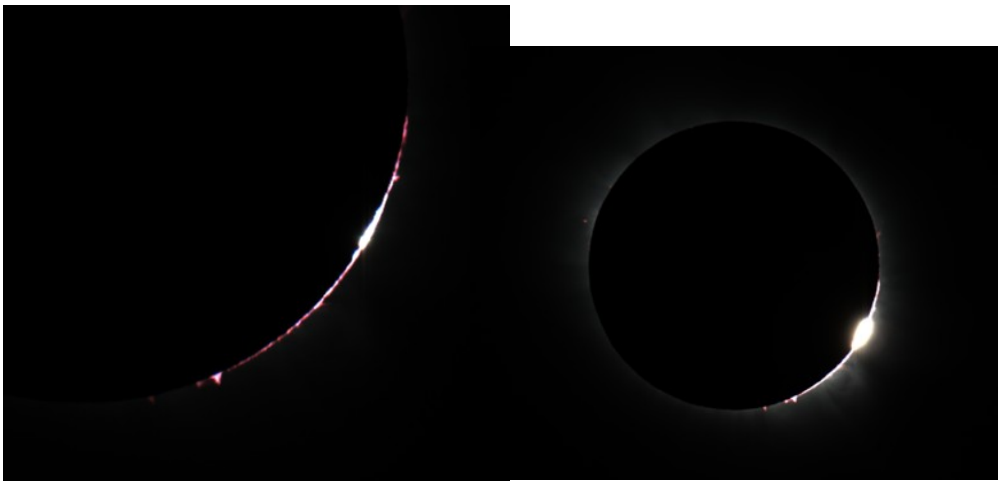
By this point the early morning clouds had passed. Just as our meteorologist predicted we had clear skies.

At about 11:12 AM totality began. To the left is a photo taken just after the moon first blocked the sun.



The image below combines multiple exposures to simulate what we could see with our eyes. In real life the ultra bright prominences contrasted with the dimmer corona.

The two below were taken at the end of the eclipse as the sun emerged from behind the moon.



This was an incredible eclipse. Not only for the location, but also for the best prominences and most detailed corona when compared to any of the previous ones I have seen.

For full size pictures and a movie of the eclipse experience please see my website http://robhawley.net. All article pictures by Rob Hawley.

FPOA: Inspiring & Life-Changing

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"Nebulas are AWESOME!" –A seven-year-old exclaimed near the observing pads

For example, just a week after the Hartnell class visit, a young member of the audience to one of our presentations was full of questions. Each one was relevant, well stated, and often imaginative. Strangely though, midway through the talk, he suddenly fell silent. I admit to being disappointed when he did—was I being too technical in my answers? Had I misunderstood and given a *non sequitur* as an answer? But at the end of the talk, when his mother brought him forward to see me, the reason for his pause became clear as she said, "*Now* you can ask your questions." And so he did...

"The second telescope I looked through was to observe Venus. I was truly amazed at how shiny and beautiful it is. It looked so close that I couldn't stop smiling and then I truly understood how our teacher gets so happy talking about this because it's true, our Universe and everything that surrounds us is so beautiful, so much mystery, and so much more to learn." –Hartnell Student

Eventually, when the surge of queries abated and I complimented him on his inquisitiveness and the clarity and perceptiveness of his questions, his mother complained, "Oh, he is always asking questions at home. We don't know where to get the answers, and he asks so many that we have to tell him to stop." Immediately, Peter Jenniskens and I nearly shouted in chorus, "No! He can't *possibly* ask too many questions!" We both knew how important—and fragile—a trait his inquisitiveness was, especially in combination with his apparent intelligence.

We all should hope this was another life-changing experience and that mother and son take us up on our offer to return to The Peak so he can ask as many questions as he wants. Clearly he was a bright prospect, whose destiny might well be shaped by his experiences with FPOA.

"Thanks again for making it a life changing experience for our students!" –Pimol Moth, Hartnell College Faculty

So, yes, we really do inspire and change lives at FPOA on a regular basis, thanks again to your continued financial support and involvement.

To experience first-hand the emotional rewards of inspiring and changing lives, please contact "schedule at fpoa dot net" and put your name on the list to help out with several of our upcoming programs.

"It really felt spiritual to say the least, and I felt connected with the stars."

How Can I Help?

FPOA welcomes your help in any of a variety of ways, depending on your capabilities and interest is an incomplete listing of help we can use:

Run a Telescope—During public programs at The Peak or remote locations we need people to set up telescopes (your own, Challenger, or a portable FPOA telescope), select crowd-pleasing astronomical targets, aim the telescope, describe/explain the target to the viewing public, organize the flow of viewers, answer questions, and make sure the target stays centered and in focus.

Support Telescopes or "Float"—At each public program we need a couple of people to help answer questions and organize flow on Challenger and other telescopes.

Membership or Outreach—Are you outgoing, friendly and personable? If so, we can always use your talents in critical roles such as Membership Chair and coordinating public and private events.

Maintain our Operational Infrastructure—We really need people who are handy with tools to help us maintain the observatory. The needs vary over time, but include electrical, structural, roofing, mechanical, painting, weed whacking, concrete, and others. We can also use good ideas on how to improve our layout as we renovate. If you are good at interior design, we could use a cost-effective makeover!

Give a Presentation—Most public programs include one or two presentations of around 30-45 minutes length. Good ones have lots of appealing graphics that help convey concepts in an interesting way, move quickly, can be understood at several levels, avoid getting bogged down in technical details,

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engage the audience interactively, and change dynamically to match the audience's response and their questions.

Other—If you can contribute skills in Legal, Architecture, Management, web design, administration, or getting things organized, let us know.

Contact Doug Brown at 4O8.3I4.2844 or nworbd at Comcast dot net.

Quadruple System in Leo

By Patrick Donnelly

After 20 plus years of observing, procrastinating, and observing, I have finally been able to achieve one of my most sought after observing goals. I was able to resolve Regulus, an observational triple system in Leo. The Challenger 30" telescope was used along with an occulting bar and a 10mm eyepiece.

Regulus, Alpha Leonis (α-Leo), is the brightest star in the constellation of Leo the Lion. With the unaided eye α-Leo has a visual magnitude of +1.36 and lies less than 30 arc-seconds from the Ecliptic. As such, α-Leo is often occulted by the moon. In 1959 Regulus was occulted by Venus and Regulus will be occulted by Venus again on October 1, 2044. The Regulus system is approximately 79 light-years from the earth.

Visually Regulus is a triple star system, designated as ΣI 6. The brightest member, Regulus "A," is a blue-white main sequence giant with a visual magnitude of +1.36. The secondary star, Regulus "B" is separated from the "A" component by approximately 177 arc-seconds. The "B" component is a main sequence star of magnitude +8.1 similar in colour to Arcturus. The "B" component, in turn, is orbited by the "C" component, a dim +13.5 magnitude main sequence red dwarf, which is separated from the "B" component by 2 arc-seconds and has an orbital period of approximately 2,000 years. The "A" component and the "B/C" components have the same proper motion through space and are at the same distance from Earth, which means that that this is a true multiple star system. Recently, it was discovered that Regulus "A" has a spectroscopic companion (probably a white dwarf) with a period of 40 days. Hence, Regulus is really a quadruple star system.

Regulus is well placed this time of year. Seeing all three (3) visual components was possible because of the 30" Challenger telescope. In fact, within one week it was possible to resolve both Regulus and Sirius. It is quite amazing what can be done at the Fremont Peak Observatory.

Star-B-Que 2015

By Ron Dammann

Star-B-Que is a time to meet old friends and catch up on the latest happenings at the observatory. It's also a time appreciate the unique venue that is FPOA. To have an observatory in a State park and to be able to observe from a mountain site close to where we live is truly remarkable. I was looking in my personal logbook for technical information on the Challenger telescope Digital Setting Circles which were damaged by a lightening strike earlier this month to the utility pole power transformer on the east side of the observatory and came across an entry from October 6, 1996. "Amateurs back in the Midwest and East would kill for a night like this! ".

Please don't let the small group Board directors have all the fun of putting on Star-B-Que. Step up and help out his year and get involved. Contact any of the Directors to volunteer your services.

BTW, if any member would like to donate a working BBox to FPOA to replace the damaged one, we can supply a Donation Letter for tax purposes.

2015 Membership Renewal

Renewals are easy. You can use the forms on the membership page http://www.fpoa.net/membership.html to pay with either PayPal or via a credit card. For those preferring paper you can just send a check (that has your current correct address) to : FPOA Membership, c/o Rob Hawley, 1233 Hillcrest Dr, San Jose CA 95120

If your email has changed, then please be sure to include that in either the PayPal payment as a comment or a note with your check.

FPOA on the Internet

Phone Number:	831-623-2465
Email Address:	info at fpoa.net
Website:	www.fpoa.net
Members Only Page:	members.fpoa.net
Members List Signup:	http://fpoa.net/mailman/listinfo/fpoa-members

EMAIL DELIVERY OF THE OBSERVER

Dear FPOA Members,

We have been delivering the Observer via email for the past several years. This obviously saves the Association postal expenses, and assures the quickest delivery to you. However, several of you no longer have valid email addresses, due to ISP changes, moves, etc. If you would like to continue to receive, or begin to receive, notification of the Observer via email, please send your current email address to membership at fpoa.net

The *Fremont Peak Observer* is published four times a year (Winter, Spring, Summer, Fall). Articles from members are encouraged and should be emailed to <schedule at fpoa.net > Articles should be in plain text or MS Word format. Deadlines are Feb. 1, May 1, Aug. 1 and Nov 1, respectively.