

# The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

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## ad astra\*\*\*\*\*

I have to say, I think we had a pretty darn good July picnic this year, despite having to work with a weather situation that was far from ideal. We did play “chicken” with the thunderstorms. After some fairly vigorous behind-the-scenes debate between members of the Board, I decided that we would take the chance that we might all need to run inside at some point. Sunday (the rain date) would have been a better day, weather-wise, but the problem was that our speaker Jason Kendall was not able to reschedule.

And Jason was excellent! We will surely try to have him visit LVAAS again in the future. Hopefully we will find definitive proof that E.T.’s exist sometime soon, so then we can have Mr. Kendall back to eat a little terrestrial crow. He does not believe that it is going to happen. But despite that somewhat-of-a-downer message, his talk was full of energy as well as fascinating science, and he had no problem keeping everyone’s attention when the thunderstorm finally came through, towards the end of his talk.

I know a number of people decided not to come when we elected to stay with Saturday, and a few people even assumed that the rain date was in effect when it wasn’t. This is unfortunate and I’m really sorry for the members who were inconvenienced. We tried to communicate the situation clearly via our website, and will try to do even better in the future.

Our August meeting will be at Pulpit Rock. Again, it is scheduled for Saturday, August 13, with Sunday, August 14 as the rain date. Please check the website (<http://lvaas.org>) for up-to-date status information. We will post a clear message on the front page, indicating whether we are staying with Saturday, rescheduling for Sunday, or still undecided, based on the best weather predictions we can find. And, we might remain “undecided” until mid-afternoon on Saturday, in order to make the best decision possible while giving everyone enough time to drive to the location.



We will have a presentation on "Modification of DSLR Cameras for Astroimaging," featuring Gary Honis of [dslrmodifications.com](http://dslrmodifications.com). Please bring your own lawn chair, since there is no seating available at the site. If you

are not a key holder, we will have someone at the gate to let you in starting at 6:00 PM.

By the way, if you have never been to Pulpit Rock, I do recommend that you try to visit our dark-sky observing site at least once. Thanks to the efforts of our dedicated Maintenance Director (Ron Kunkel), our Observatory Director (Frank Lyter), and a number of other volunteers, it truly is a very nice mountain-top park with easy access to a wonderful lookout over the Lehigh Valley, not to mention a bunch of great telescopes. The overall progress on the 40" building has been slow lately, but the most important room is in great shape, mostly thanks to the efforts of Steve Altomare and Tom Applebach.



### **Board of Governors Update**

Simon Porter, who has been a member of the Board, was Assistant Director as well as Acting Director for many months, is moving out of the area and has donated over 40 books to the LVAAS Library. I join librarian David Raker in thanking Simon for this very generous donation. Dave says that many of the books look interesting and are great finds for our collection.

Chuck Bradbury has announced that he and Donna will no longer fulfill the role of Member Services Director after this December. Chuck and Donna have done a terrific job in that role, and we really appreciate their services. As of now, this upcoming opening in the Board has not been filled, so if anyone would like to contribute by operating the Red Shift during meetings and public events, managing the inventory and sales of our LVAAS-branded apparel, and procuring staples for the annual picnic, please get in touch.

Our membership co-directors, Don and Estelle Hines, have also recently retired to inactive membership status. Don and Estelle did a really great job with the Membership Committee, and before that, with Member Services, and have contributed a lot to LVAAS in other ways such as helping at outreach events. Their contributions are already missed, and we hope that someday they can once again be active participants in the Society.

I think we now can understand that the Membership committee is one of the more demanding roles on our team. The Membership Director must be not only be the club's welcoming ambassador to new members, but also a meticulous keeper of the records of membership status, dues payments, and so on. For now, while we search for the right person to take on this job, Assistant Director Sandy Mesics and I will share the duties as Acting Co-Directors of the Membership Committee.

### **Change is the Only Constant**

I moved back to the Lehigh Valley in 2006, after joining an awesome team of engineers at Agere Corp. under the leadership of a great boss (who is now also a member of LVAAS). As Agere became LSI, LSI became Avago, and Avago became Broadcom, that team has slowly evaporated like a puddle in the hot August sun, to the point where I will be one of the last droplets to be boiled away later this month. As this was happening I had the good luck to find another terrific team to work with, the group that runs LVAAS.

There are a number of reasons that we (or at least, I) like working with a team. Together we can accomplish things that none of us could do by ourselves. As we join the team, we enjoy the privilege of contributing under the reputation that the previous team members have built, and as we participate we gain satisfaction from preserving and enhancing that reputation. We encourage and inspire each other. When a member of the team does something great, we all recognize it as something that helps the team perform its mission, or make things easier for the rest of the team, or benefits the whole in some other way. We show our appreciation and we are each encouraged in our own contributions.

When a new member joins the team, it is always a reason for celebration, and when someone leaves it is an occasion for mixed emotions: we are sad to lose that person's ongoing contributions, encouragement, and inspiration, but we focus on recognizing all the good that they have done.

There is room for a lot of different styles and approaches on the LVAAS team, and our diversity makes us better. We have some contributors who seem perfectly suited to the jobs they have taken on, and just make it look easy time after time. We have some who are operating outside their comfort zone, but with dedication and persistence doing a terrific job that gets better every time. We have differences of opinion, not only about day-to-day matters, but also longer-term strategic decisions, and sometimes there are passionate discussions, but we always seem to come to a decision and continue to move forward together. And I've seen members take care of their responsibilities to the society with such complete professionalism, in the face of the most terrible adversity, that I have to salute them. What we all have in common is the goal: to further the mission of LVAAS and make the Society the best it can be.

I feel very fortunate to be a part of this great team, and to be in a position to offer to share it with a few newcomers. Though we currently only have two openings at the level of committee chair, there is always room for new volunteers on our projects, for events, and in assistant roles. I look forward to welcoming new members to the LVAAS Board of Governors and the greater operational team soon. Ad Astra!

— *Rich Hogg*

# General Meeting at Pulpit Rock

## Saturday, Aug. 13 2016, 7 p.m.

### Modification of DSLR Cameras for Astroimaging featuring Gary Honis DSLR Modification Service

Gary Honis has been an avid deep sky observer and astro imager since 1987. A graduate of Penn State University with a B.S. Degree in Electrical Engineering, Gary is licensed as a Professional Engineer with over 33 years experience as an Electronic Engineer in the Telecommunications Industry as an official of the US Government. He has been modifying Canon DSLR cameras since 2004 and providing detailed modification instructions online to assist others wanting to self modify their cameras. His images have been published in *Sky & Telescope Magazine*, *AstroPhoto Insight Magazine*, "*Digital Photography*" and the Marvel Studios Movie "*Thor*." Gary is an officer of the Greater Hazleton Area



Astronomical Society, and a member of the International Dark Sky Association, where he has been actively involved in light pollution reduction efforts for 26 years.

**DSLR camera modification procedure will be explained and will include:**

- **History of digital camera modifications**
- **DSLR camera improvements over time for astro imaging**
- **Explanation of modification types and filter replacements for astro and infrared imaging**
- **Do-it-yourself DSLR modification procedure and considerations**
- **Maintaining autofocus after IR cut filter replacement**
- **Image processing considerations for modified DSLR cameras**
- **Peltier cooling methods for DSLR cameras**
- **Do-it-yourself Whole Camera Peltier Cooling System**
- **Test results and advantage of DSLR camera Peltier cooling**

# **ELECTIONS ANNOUNCEMENT**

## **Nomination Of Officers Of LVAAS For 2017 Term**

### **NOTICE -- A Business Meeting will be convened for Election of the 2017 Society Officers at the October General Meeting**

The LVAAS October General Meeting will be held on its regularly scheduled date – October 9, 2016 at 7:00 PM, at South Mountain, during which a Business Meeting will convene for the purpose of election of our 2017 LVAAS Officers.

LVAAS Full Members in good standing (current dues paid) are entitled to vote and to be considered for office. Any society member in good standing may nominate qualified individuals until nominations are closed during the September General Meeting, scheduled on September 11, 2016. Nominees need to agree to accept a nomination at the time of the nomination in person, or in writing and signed by the nominee, should the nominee not be able to be present when nominated. Except as provided, no nomination shall be accepted by the Nominations Committee, nor shall additional nominations be placed on the ballot after the close of nominations during the September 11, 2016 General Meeting. In the event no qualified candidate is listed for one or more of the officer positions on the Election Ballot for any reason at the time of the election during the October 9, 2016 General Meeting, the election shall take place for the remaining offices. After the election results are verified, the Nominations Committee shall open the floor for the nomination of any qualified candidates to all vacant officer positions. Any candidates not elected to office in the just-completed election may be nominated for any position except a position that the candidate held for the immediate past two consecutive terms of office. The newly elected officers' terms begin at midnight November 30, 2016 and continue until midnight on November 30, 2017.

#### **Nominees to date include:**

**Director: Rich Hogg**

**Assistant Director: Sandy Mesics**

**Secretary: Ron Kunkel**

**Treasurer: Gwyn Fowler  
Dave Moll**

**Regards,  
Dave Binder, Nominating Committee Chairman  
Bill Dahlenburg, Assistant**

## Minutes for the LVAAS General Meeting of 9 July 2016

The July General Meeting, the annual picnic, was held at the LVAAS South Mountain headquarters in Allentown, PA. The meeting started at roughly 5:00 PM under heavily overcast and somewhat threatening skies. Members supplied loads of food in addition to the LVAAS-supplied drinks, burgers, and hot dogs. Additionally there were some very creative desserts in the form of cakes and cupcakes.

Director Rich Hogg welcomed everyone and informed them of the intended agenda, namely the speaker, then a short break, followed by the usual information session which would include the new member introductions.

Beginning at 7:00 Rich introduced the speaker, Jason Kendall, adjunct professor of the Department of Physics from William Paterson University. The topic was "Life in the Universe: Are We Alone?" He began the presentation by stating that, "Yes, we probably are alone in the universe, at least within a 5 million light-year radius." However, Mars is most Earth-like, and if life does exist on Mars, the second site in the Solar System, then life likely exists everywhere in the Solar System, and probably in the universe. In summary, Mr. Kendall stated that we just do not know enough to intelligently answer the question. Mr. Kendall was accompanied by his wife, Donna Sterns, a music composer. Some of her compositions played during the presentation. The presentation concluded about 8:20 after a round of questions. The presentation was very well received.

Following a short break at about 8:30 PM, Director Rich Hogg regrouped the membership. He thanked Steve Walters for his donation of a small finder telescope to the Society. He mentioned that despite the absence of Carol Kiely, there would be a Lunatics and Star Gazers event on Friday the 15th of July, and the monthly star party on the 16th. He also stated that the August General Meeting would be held, Saturday August 13th, at our Pulpit Rock site, and that there would be training sessions conducted and keys available for interested members.

Rich then called on Frank Lyter, Pulpit Rock Observatories Director, for an update on the 40" mirror and the building remodeling. He reported that mirror figuring was complete and now the central core needed to be removed and then the mirror could be coated. A contractor in New York State had been identified for the coring task as well as a contractor for the coating. This does however involve transporting the mirror from Illinois to New York, then back to Illinois, likely by members doing a road trip similar to when we took the mirror to Illinois to begin with. After the primary mirror is coated and back in Illinois, then the secondary mirror will be completed. Frank also mentioned that members Steve Altomare and Tom Applebach had essentially completed the renovation of the bathroom in the 40" building and it looks fabulous. He also stated that much other renovation work, both electrical and structural, remained to be done in the building, with lists of tasks and scheduled work days to be posted to our website.

Rich then made some announcements as regards LVAAS Board of Governors. Chuck and Donna Bradbury will be resigning from Member Services effective the end of the year. Chuck and Donna have run Member Services for about two years, and they have done a very admirable job and were thanked for their service by Rich and the members present. Rich also announced that Don and Estelle Hines were resigning immediately from their positions as Directors of Membership. They were also thanked for their many years of service to LVAAS, having served on various committees, Member Services, and more recently as Membership Directors.

Rich then conducted the new member introductions. A second reading was conducted for Somesh Rahul. First readings were conducted for Shaun and Alisa Matthews.

Rich then called on Dave Binder for a nomination committee report. Dave reported that Rich, Sandra Mesics, and Ron Kunkel, were all eligible for a second term in their current offices and that they each had agreed to run again, but additional nominations for these offices were still desired. Scott Fowler is not eligible to run for Treasurer as he has already served two terms. Dave announced that Gwyn Fowler had agreed to run for Treasurer, but that additional nominations for this post also were still desired. Nominations for these offices will be open through August and close at the September General Meeting, with elections to be held at the October meeting.

The meeting adjourned at 9:10 PM.

Minutes prepared and submitted by Ron Kunkel, Secretary.



**The Dumbbell Nebula, Messier 27, in Vulpecula.** A 110-minute exposure (22 X 5-minute sub-frames aligned & stacked), acquired July 27-28, 2016 from Neffs, PA. Equipment: 8" Celestron EdgeHD with Optec Lupus reducer @ f6.2, SBIG STF-8300C camera, IDAS LPS filter, SX Lodestar X2 guide camera on ZWO 60mm scope, iOptron CEM-60 mount. Software: Nebulosity 4 capture & pre-process, PHD2 guiding, Photoshop CC post-process. A big thanks to Mike Morgan with processing assistance on this image. I had a devil of a time with it, and I had to turn to the Master. © David M. Moll



## **LOOK GOOD WHILE LOOKING**

Your Red Shift Store at South Mountain is now fully stocked with clothing merchandise that you just must have for yourself or others.

What better way to show off the organization that you belong to than by wearing apparel with one of the LVAAS Logos?

Ball Caps (one size fits all) in Navy Blue or Natural/Royal Blue

T-Shirts from size small to 2x large in Athletic Heather, Navy Blue or Black

Polo Shirts from size medium to 2x large in Black or Celadon Blue

### **And for the not-so-adults:**

T-shirts from size small to large in California Blue, Pink, Neon Green, Island Yellow

### **And for those cooler months soon to come:**

Fleece Jacket (real great windbreaker) from size medium to 4xxx large in Blue Glacier

Beanie (alright, call it a stocking cap) in Navy Blue

Sweatshirt from size small to 2x large in Navy Blue or Ash

Denim Shirt from size medium to 2x large in Light Blue

All this clothing merchandise is available now at the Red Shift store on Star Party nights and General Meeting nights.

Stop by, and we thank you for visiting the Lehigh Valley Amateur Astronomical Society's (LVAAS) Red Shift store. LVAAS is a 59-year-old 501(c)3 non-profit educational institution. Your purchase will help us carry out our mission of bringing astronomy to the public. Thank you for shopping, and for your support!

Contributed by Chuck and Donna Bradbury, Member Services

# Ron's Ramblings

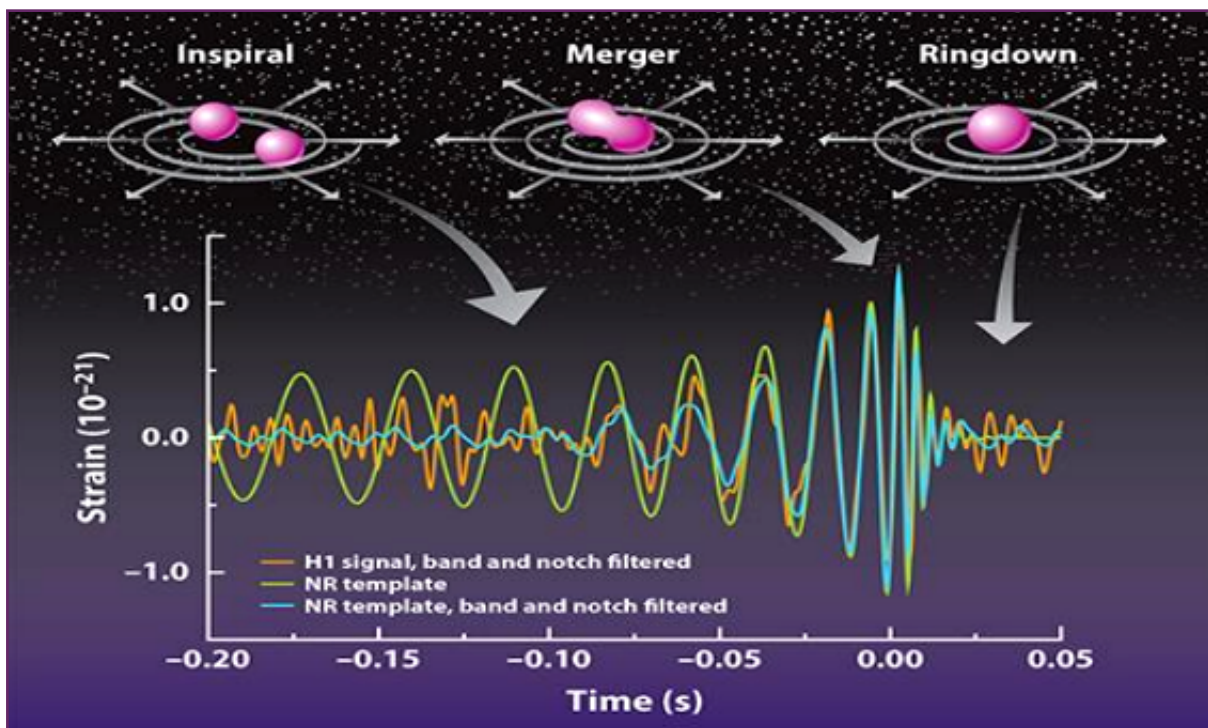


*Ron's Ramblings is a monthly series of articles describing some recent or otherwise important event in astronomy. The ramblings will attempt to describe both the astronomical event and its significance. Obviously, the description will be that of a rambling amateur astronomer.*

## General Relativity Vetted by LIGO Detection

In my March 2016 Ron's Ramblings I discussed the detection of gravitational waves by LIGO. Here I want to elaborate on that event, and discuss what it means for Einstein's theory of General Relativity.

An analysis of the gravitational wave signal detected by LIGO's Hanford, Washington detector on September 14, 2015 is shown in the figure below.



The green line represents the hypothetical signal of the gravitational wave that impacted the detector. This modeled signal is based on General Relativity's prediction about the merger, the decay of the last few orbits, the violent collision of the two black holes, the astonishingly rapid relaxation to quiescent rotating black hole, and the propagation of the gravitational waves through space and to the detectors. The blue line shows how the detector perceived that incoming signal. From the analysis, the detector was most sensitive to the higher frequencies of late merger and the ringdown portions of the event as evidenced by the close similarities of the two lines.

But the main finding of the analysis is that the residuals – obtained by subtracting the detected signal from the modeled signal – are consistent with noise. This means that the predictions of General Relativity disagree with the detected signal by at most, 4%.

At first glance this analysis seems to only add to the litany of previous tests that General Relativity has passed with flying colors. However this test is vastly more significant than that. All other tests have shown that General Relativity is valid in the weak-field regime – mass moving at non-relativistic speeds. This test shows that General Relativity is valid in the extreme space-time dynamics around the event horizon of a black hole, i.e. the strong-field regime – masses moving at relativistic speeds. In fact, this event is the best evidence to date for the existence of black holes, considerably stronger than that provided by stars orbiting the super-massive black hole in the center of the Milky Way. In essence, the gravitational wave signal observed by the LIGO detectors shows no deviation from what General Relativity predicts for the strong-field regime of the theory.

Reference:

<http://physics.aps.org/articles/v9/52>

The end of my ramblings until next month. Ron Kunkel



# What's Happening at Pulpit Rock

Our observatories and grounds at Pulpit Rock and South Mountain require regular maintenance, and many renovations are currently being planned and executed. Members willing to devote some time and energy to help keep our facilities in top working order, please check our website and watch this space for updates on work in progress or being planned. Per ardua ad astra! Photo of Pulpit Rock Astronomical Park by Gary A. Becker



## News from the Field - from correspondent Ron Kunkel:

"Here are some pictures taken by Tom Applebach. He and Steve Altomare have basically single-handedly renovated the bathroom in the 40" building, having essentially completed it just this past Saturday, July 2nd. It really looks gorgeous, if that's an apt description for a bathroom. They are now starting on the vestibule and will likely continue into the rest of the building."



"Some notes explaining the pictures:

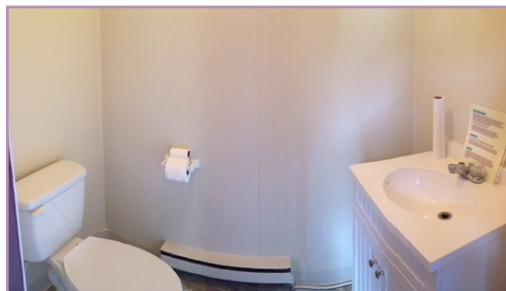
**First** shows Steve making a template from cardboard for fitting the new linoleum in the bathroom.

**Second** shows Steve transferring the template to the new linoleum for the bathroom.

**Third** shows Steve working at the sink installation. Note you can see the newly installed floor linoleum.

**Fourth** shows Steve supposedly testing the sink water for potability. I think more likely testing the faucet connection.

Note, all above photos were taken by Tom Applebach; those below by Steve Altomare."



\*\*\*\*\* "Best mountaintop outhouse and restroom in Berks county!"  
- Frank Lyter, director, Pulpit Rock Observatories



# LVAAS Astroimaging Calendar 2017

It's that time of year again to start thinking about a 2017 edition. We'll hope for clear skies and lots of opportunity before the October 28, 2016 deadline for submissions. If all goes well we should have the 2017 calendar available for sale at the November 13th General Membership meeting. We are always in need of LVAAS facility photos too, if you happen to have a camera handy when visiting. Remember, we don't publish photos of individual people due to the need to obtain authorizations. Large group photos may be considered. Image size should be 3531 x 2354 or larger at 300 dpi.

The monthly Astroimaging meeting at South Mountain is on summer hiatus, with meetings set to resume on September 15th at 7:00 p.m.

Many thanks to Simon Porter who donated his power-point presentation on Planetary Imaging (*as well as forty books to our library. -ed.*)

Please check out Steve Altomare's invention: a dew heater control box that rivals an expensive off-the-shelf model. Steve's heater is available through the Red Shift store with proceeds benefiting LVAAS: please go to: <http://www.cafepress.com/lvaasredshiftonlinestore>. Clear Skies!

-Sandra Repash, Calendar Editor



Above Calendar Photo Credits: **Gary A. Becker**, (L) upper: Pulpit Rock Astronomical Park and (R) lower: the Brooks Observatory at South Mountain Headquarters. **Dave M. Moll**, (R) upper: Sunrise at Pulpit Rock. **Rae Klahr**, (L) lower: Sunset over South Mountain Headquarters LVAAS.

by Gary A. Becker



## Anticipating the Big One

Scores of Internet sites will be carrying this event live, but if you choose to participate online, you will be missing one of nature's most spectacular happenings, a total solar eclipse. Most people who have witnessed darkness descend during midday and the wispy corona surrounding the moon want to see another. Some who are bitten by the "bug" chase them all over the world. I've witnessed five total solar eclipses, and I hope to be in Wyoming with friends on August 21, 2017 for my sixth.

All of North America gets to see some partial aspect of this event, but along a narrow path about 65 miles wide, stretching from Oregon, through Idaho, Wyoming, Nebraska, Missouri, Illinois, Kentucky, Tennessee, Georgia, and South Carolina, the eclipse is total; in other words, the sun will be completely covered by the moon. During the partial eclipse, when part of the sun is still visible, special filters must be used to view the sun safely, but throughout totality, conditions are safe for direct observations because no part of the sun is exposed.

As more of the sun is covered, the landscape grays into purplish hues, and shadows have less contrast. Several minutes before totality, the brighter planets become visible against what looks like an ominously dark cloud rising up from the horizon, the approaching shadow cone of the moon. However, it's the last 10 seconds prior to totality that are often the most spectacular. The sun looks like a diamond ring decreasing in carat weight, until Sol is just shining through the valleys along the Moon's limb—Baily's beads.

The viewer is absorbed in a shroud of darkness, the diminution of light so rapid that the eye cannot keep pace. Often the initial moments of totality appear to be the darkest. The intensity of light varies from three to six full moons depending upon prevailing haze and humidity. Bright stars may become visible, and the horizon has a peach-colored luminescence.

If you have ever wanted to be wowed by nature, a total solar eclipse is one of your best bets.



The path of totality of the solar eclipse of August 21, 2017 is shown on this Google map from NASA's Eclipse Website. The "GD" on the map stands for the location of the greatest duration of totality, which for this eclipse is 2 minutes 40.3 seconds. The "GE" stands for greatest eclipse, the position on the Earth's surface where the moon's shadow points closest to the center of the planet. Here the duration of totality is 0.2 second shorter.

- **Check out Gary's post on this month's Perseid meteor shower**, which is predicted to be more active than usual this year. The link to Gary's website for the August 7th post is: <http://astronomy.org/StarWatch/August/index-8-16.html> - editor

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 Moravian College Astronomy - [astronomy.org](http://astronomy.org)



*From the LVAAS Archives:*

## Stellafane, Horseplay, and a Dark Sky Site

By Sandy Mesics

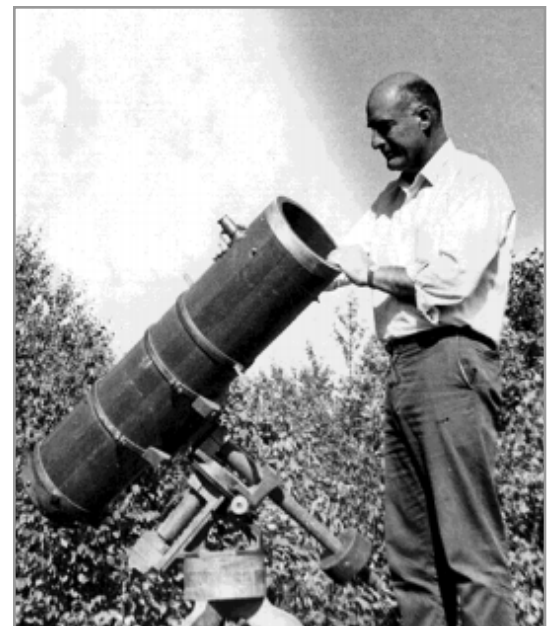
The 81st annual meeting of amateur telescope makers will be held this month at Stellafane, Vermont. Members of the Lehigh Valley Astronomical Society (LVAS) were among the earliest attendees at this meeting. Here is a rundown of the 11th annual Stellafane meeting, which was held in 1936:



The “Allentown Group” at the 1937 Stellafane Convention. Left to right: Unidentified gentleman with pipe, Eugene Carl, Dr. George Knecht, two unidentified ladies and one unidentified gentleman, LH Cutten, and Ralph Schlegel. Courtesy of Stellafane website. Note, this is a mirror-reversed image.

### Minutes of the Telescope Maker’s Convention Saturday August 8th 1936, Springfield, VT

The eleventh annual convention Springfield Telescope Makers was held on Saturday August 8th, 1936 at Springfield, VT on the top of a mountain at their observatory which they call “Stellafane.” The convention opened with registration. Mr. Cutten of the L.V.A.S. was the first to register. At about 4:00 p.m. telescopes from everywhere were set up on the convention grounds, and all those who were interested were examining their favorite telescopes. This was followed by a supper which was held at about 6:30 p.m. at which time everyone enjoyed the famous “bean hole beans.” Then the meeting was held, starting at about 8:30 p.m. This was conducted mainly by Mr. John Pierce of Springfield.



Mr. John Pierce, Springfield Telescope Makers. Courtesy of Stellafane web page.

The main portions of the meeting included speeches by persons representing other clubs at the convention, at which time Dr. Knecht spoke for the Allentown group and their society. Then Mr. Russell Porter spoke on the subject of the evening, the 200-inch telescope, which he illustrated with a series of interesting slides.

Following the meeting, the eleventh convention was adjourned.

Secretary of the L.V.A.S.  
Eugene Carl Jr.  
Allentown, PA



Russell Porter, facing camera. Courtesy of Stellafane webpage.

At the time that Porter reported on the progress of the Hale telescope, the mirror blank had successfully been cast and had been transported by rail from Corning, New York to the Caltech optical shop in Pasadena, where it was to be ground, polished, and figured. Because of delays caused by World War II, the mirror would not be completed until 1947.

But Porter could report that the construction of the telescope was underway: Its components were fabricated primarily at the Westinghouse South Philadelphia plant and then shipped by boat through the Panama Canal to San Diego and trucked to Palomar Mountain for assembly inside the dome. The first telescope parts wouldn't arrive at Palomar until 1938, but construction of the observatory was finished in 1939. The dome was designed by the multi-talented technical illustrator Russell W. Porter himself.

## Meanwhile, in August 1966:

- George Maurer wrote an article for the Observer on collecting micrometeorites from rainpouts using a magnet
- Dave Moll won a scholarship to Penn State
- LVAAS acquired a drill press for the shop, to accompany the big lathe, the grinding machine, and the power saw (50 years later, they are still there, silent sentinels to the days of heavy construction)
- The housing for the 19-inch is complete, and the telescope is ready to be tested.



The 19 inch scope removed for renovation in 2006.

- Apparently some members were not well-behaved at the monthly field meet : “Only skimpy reports were received on the July Field Meet, but those were not too encouraging. Not only did the moon interfere with observing but there seems to have been considerable horseplay, which drove away some of the members in a state of disgust. The August Field Meet is scheduled for August 13 at Jack Fried's farm beyond Hellertown and all who are interested in observing are invited to attend.”
- Lastly, LVAAS was on the hunt for a dark-sky site, and things were about to get interesting. From the minutes of the general meeting: “Director Ference commented that we have eight sites under consideration, four of which seem especially good; our recent progress is encouraging.” From the minutes of the Board of Governors: “There was also a discussion about the planned meeting with Henry Kawecky regarding possible use of his mountain top.”



LVAAS Headquarters in the 1960s with the “doghouse” under the stairs. Note the 10-in. reflector on the left.

# Highlights of the August Sky (and a little lunacy) by Carol Kiely



There is nothing quite like stargazing on a warm August evening. There are so many fantastic objects to look at this time of year. Being British, the first asterism I look for is ‘the teapot’ in Sagittarius - the Archer. Then I imagine that I have made a pot of tea and look for the steam coming out of the spout. The ‘steam’ of course is not real steam, it is the Milky Way which, at this time of year, forms a band across the sky from Sagittarius in the south to the ‘W’ of Cassiopeia in the north.

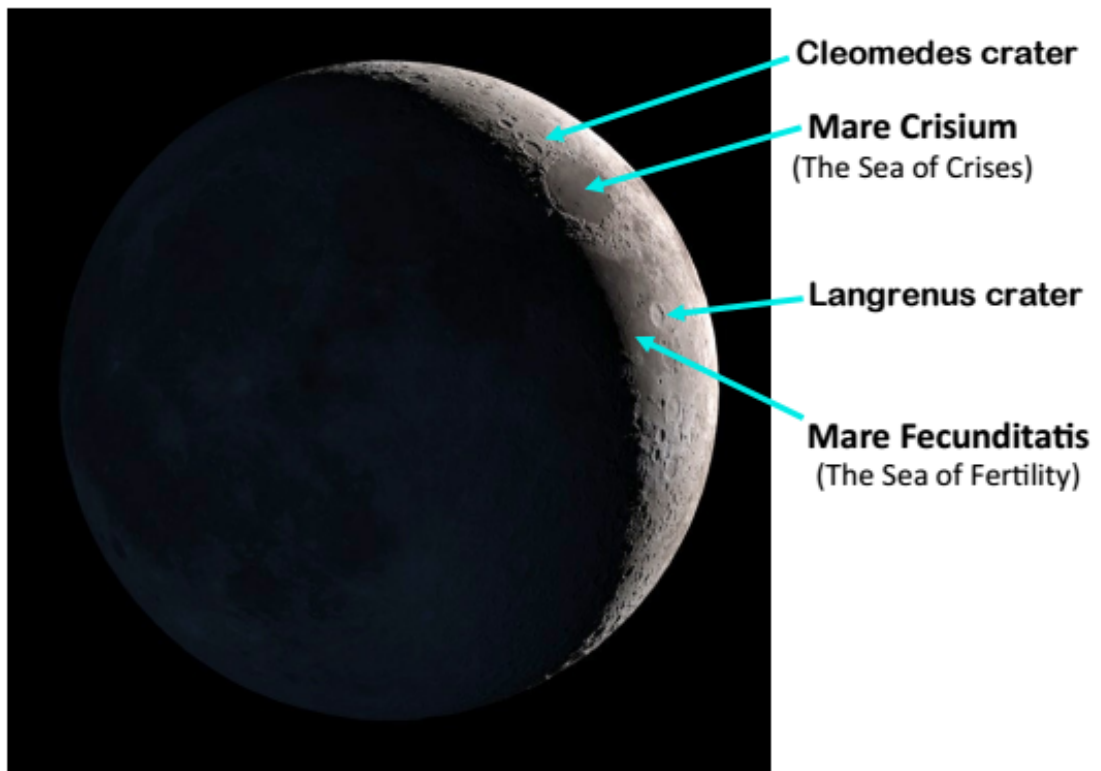
Unfortunately, the skies around Bethlehem and Allentown are not dark enough to see the Milky Way but you should be able to pick out the three stars that make up the Summer Triangle. These are Vega, in Lyra - the Harp, Altair, in Aquila - the Eagle, and Deneb, in Cygnus - the Swan. The reason why Vega and Deneb are so bright is because they are relatively close to the Earth, 25.1 and 16.7 light years away, respectively. Both are type A main sequence stars. Deneb, however, is supergiant located over 1,400 light years away. It is almost 200,000 more luminous than our Sun. If Deneb were moved closer to a distance similar to that of Altair or Vega then it would appear as bright as a crescent moon in the night sky.

Once you have located these, you should then try to find the Ring Nebula (in Lyra) and Albireo (a beautiful double star in Cygnus). I never get tired of looking at these through a telescope. Not far from Albireo is another object, M27, that is relatively easy to find. This is the Dumbbell Nebula in Vulpecula - the Little Fox. From here you should also be able to locate the main stars of two other small constellations Sagitta - the Arrow, and Delphius - the Dolphin.

If you go back to the teapot and move west you should be able to find the constellation Scorpius - the Scorpion. There will be three bright objects in this constellation, Antares, Saturn and Mars. On August 11th, a waxing gibbous moon will lie just above them. You might also see a few shooting stars as you gaze into the heavens that night. These are the **Perseids** - a meteor shower that results from the Earth passing through the debris left behind by the comet, Swift Tuttle. You’ll have a better chance of seeing them late at night after the moon has set or in the early hours of the morning of August 12th and 13th.

## **And now for a little lunacy.....**

On the night of this month’s star party (August 6th), the Moon will only be 14% illuminated - a thin waxing crescent. It will, however, be a good time to compare the appearance of two prominent impact craters that have similar diameters: **Langrenus**, on the eastern shore of Mare Fecunditatis, and **Cleomedes**, close to the northern rim of Mare Crisium.



*Image Credit: NASA/Goddard Space Flight Center Scientific Visualization Studio*

While NASA and many amateur astronomers are monitoring the flashes of light being emitted from the lunar surface when a meteoroid smashes into it, claims of other changes to the lunar surface are still controversial. On December 30th 1992, while recording images of the moon using a one-meter reflecting telescope, French astronomer Professor Audouin Dollfus noticed a series of glowing features on the floor of Langrenus crater. These glows were not there the day before. Their shape changed with time, and unlike impact flashes, it took several days for them to fade. He concluded that the glows came from dust being blown up from the surface by gas escaping through the cracks on the crater floor. During the Apollo 11 mission, Neil Armstrong, also reported seeing part of the moon glow. There have been many reports of transient lunar phenomena (TLP) and while their origin is still a subject of much debate, they have been catalogued by NASA. There is a good article all about TLP published in the *Astrophysical Journal*, 667:1-15, 2009, May 20. You can download a pdf version at: [iopscience.iop.org/article/10.1088/0004-637X/697/1/1/pdf](http://iopscience.iop.org/article/10.1088/0004-637X/697/1/1/pdf) .

The walls of Cleomedes are much more heavily worn than those of Langrenus. Evidence of numerous impacts both large and small are clearly visible. The crater floor is also darker and flatter than that of Langrenus, yet it is still heavily cratered. See if you can see the rille, known as Rima Cleomedes. One of its forks runs southwards between two relatively large craters in the floor.

I will be giving a short presentation about transient lunar phenomena at the next **Lunatics and Stargazers evening on Friday, August 5th at 7.30pm**. This will be followed by a short planetarium show. If you would like to find out more about our Moon, I will be giving the talk at the next star party on Saturday, August 6th at 7pm. If you have never seen lunar dust in 3D, now is your chance.

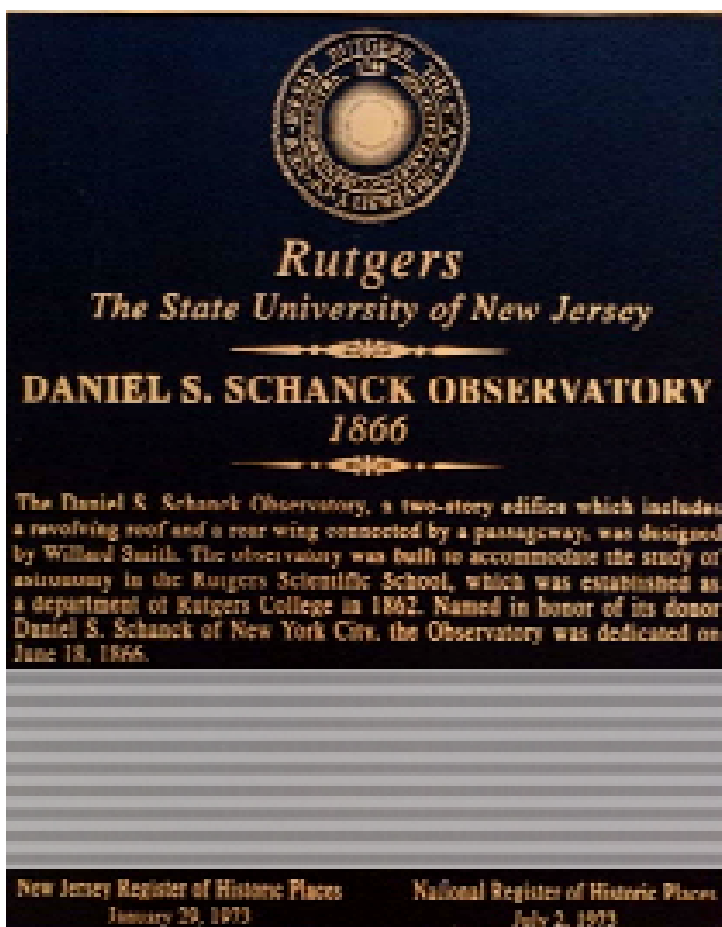
***Happy Stargazing!***

# Rededication of the Daniel S. Schanck Observatory

by Sandy Mesics

The rededication of the 150 year old Daniel S. Schanck Observatory was held at the Rutgers New Brunswick Campus on Saturday, June 18 in the Kirkpatrick Chapel. There were about 100 attendees, representing many astronomy clubs in the region, and I was on hand to represent LVAAS.

Thomas Mueller, Chair Emeritus of Rutgers' Cap and Skull Honor Society welcomed the attendees, and gave some opening remarks about how the Cap and Skull financed the rehabilitation of the Schanck Observatory over the past seven years.



**Dedication and rededication plaques on the Schanck Observatory.**

Paul Cirillo of the New Jersey Astronomical Association (NJAA) presented the history of the Schanck Observatory. It came about largely because of the Morill Land Grant Act of 1862 which provided funding for science, agriculture, and engineering education. Some of this money went to Rutgers' College, which would later become Rutgers University, and helped to advance astronomy education at Rutgers.

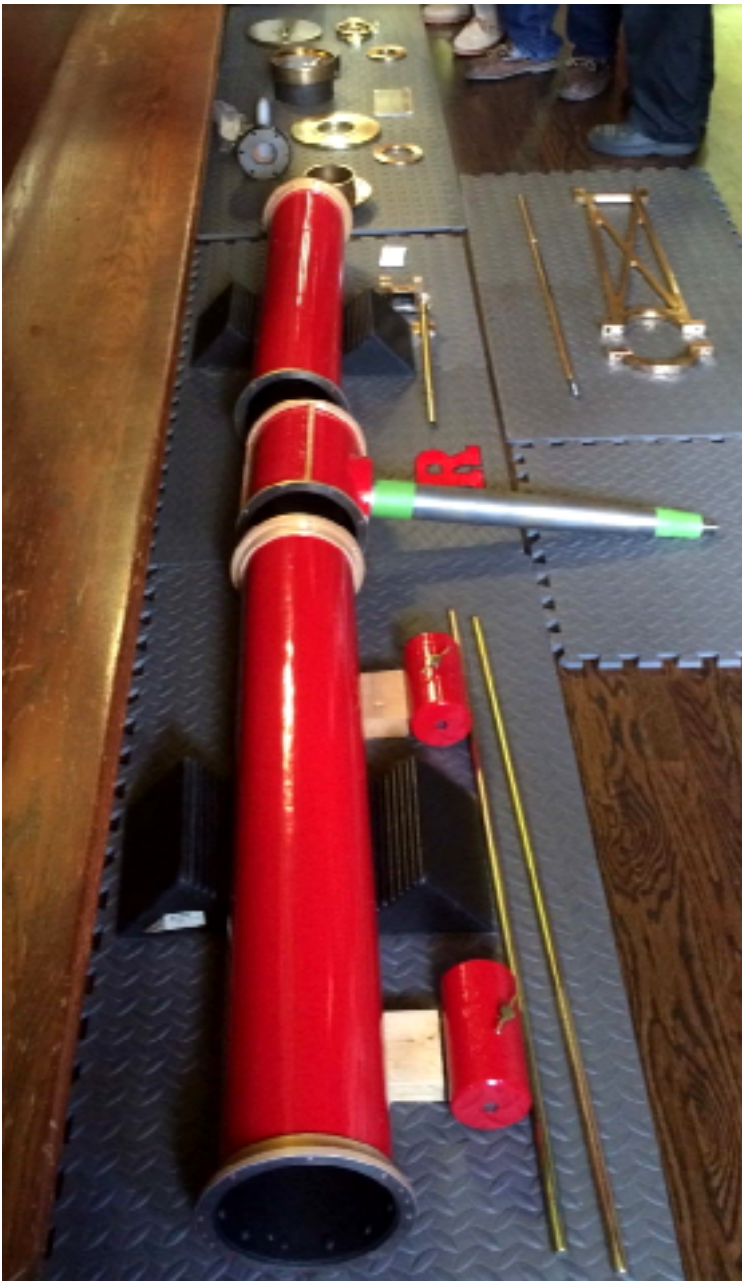
Daniel Schanck was a New York City businessman who provided funding for the observatory. When it was built in 1865, it was the fourth building on the Queen's Campus of Rutgers. The building's Greek Revival design was based on the Tower of the Winds in Athens, Greece. The cost of the observatory and equipment was over \$6,000. The building consisted of an observatory and a transit observatory that probably had a Stackpole and Brother meridian telescope, but that instrument has been long lost.



**The group gathers in the Kirkpatrik Chapel for the presentation. Paul Cirillo is in front of the screen.**

The observatory saw use from 1866 through the 1980s. Unfortunately, at some point the brick building was painted, sealing in moisture, and over the ensuing years, the building began rotting from the moisture build up. Rutgers began restoration of the building in 2011 under the direction of Wu and Associates. The painted brick exterior was stripped to its natural state and then several coats of a breathable lime wash were applied to preserve the brick finish. The original tin roof was replaced with stainless steel, and the ornate wooden roof trim, brackets, and front portico components had to be recreated to match the original design.

The interior underwent considerable restoration as well. Plaster walls were mended, patched, and painted. Floors were replaced, and new electric service was installed, as well as a heating/cooling system. Considerable landscaping will be done as well. This work was financed by a \$200,000 donation through the Cap and Skull Honor Society at Rutgers. Interestingly, the observatory is rumored to be haunted by the donor's ghost, as he prowls the grounds in search of his lost love.

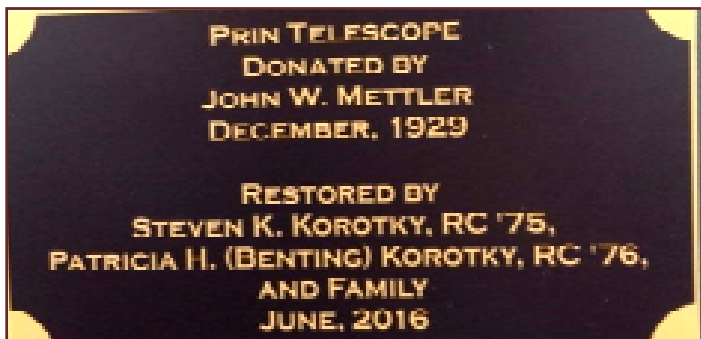


**Restored parts of the Prin telescope on display. The restoration should be complete in the fall.**

Unfortunately for astronomers, once the scope is reinstalled in the observatory, it will see very limited service. The observatory will be used mainly by the Cap and Skull Honor Society as a library and meeting space.

It is possible that the scope may be used on special occasions. The observatory is surrounded by large trees, is across the street from a well-lit parking garage, and is located in a very urban environment, so it's use as a productive observatory is long past.

**Below: Detail on the telescope pier.**



The original telescope was 6-3/8 inch f/15.7 Fitz refractor, donated by Robert Van Arsdale, an attorney from Newark, who happened to be a successful comet hunter. Arsdale had discovered two comets in the 1850s from his home in Newark! Unfortunately, that scope is lost, though the restorers of the observatory have found the objective lens.



**(L) Tower of the Winds, Athens, Greece. Retrieved from [www.britannica.com](http://www.britannica.com). (R) Schanck Observatory**

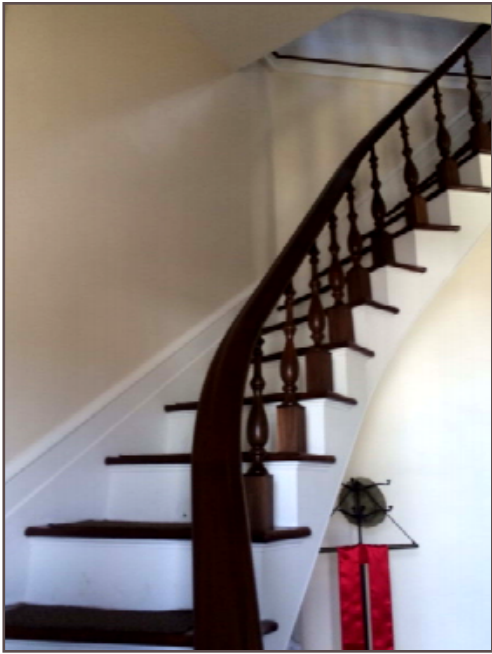
The Fitz scope was replaced by a 6-1/4 inch refractor manufactured by Hastings-Byrne. This scope was used until about 1937, and eventually made its way to the Amateur Astronomers Association of Princeton, where it is still in use at their observatory at Washington's Crossing State Park.



**The Hastings-Byrne telescope now at Amateur Astronomers Association of Princeton.**  
<http://www.princetonastronomy.org/history.html>

The Hastings-Byrne scope was then replaced by the Prin telescope. Stephen Korotky spoke about the scope restoration. The Prin scope was in operation from the 1930s through about 1980. It had been restored in the 1950s, and a Jaegers objective replaced the original. Long believed to be lost, the Prin scope was recovered from its storage place at the United Astronomy Clubs of New Jersey (UACNJ) headquarters in Feb. 2016, where it had been stored since 1994. It is composed of 460 parts weighing 600 lbs. Unfortunately while the scope, mount, and pier are virtually complete, the Jaegers objective is missing. The telescope parts were on display, and restoration is continuing, with anticipated completion by this fall.

The objective is missing. The telescope parts were on display, and restoration is continuing, with anticipated completion by this fall.



**(L) Steps leading up to the observatory. (R) The pier awaits the reinstallation of the scope. Note the large rollers supporting the roof.**

Andrew Baker, Associate Professor of Astrophysics at Rutgers, closed the ceremonies by reviewing the current status of astronomy education at Rutgers. He reported that there are 11 faculty members in astrophysics, and research is focused on dark matter and dark energy. There is still an observatory on the Busch campus called the Schommer Observatory. It has a 20-inch optical telescope.

**The north side of the transit observatory: note the long slit going up the small building in the foreground.**





# Venus and Jupiter Prepare For Close-up This August

by Ethan Siegel

As Earth speeds along in its annual journey around the Sun, it consistently overtakes the slower-orbiting outer planets, while the inner worlds catch up to and pass Earth periodically. Sometime after an outer world—particularly a slow-moving gas giant—gets passed by Earth, it appears to migrate closer and closer to the Sun, eventually appearing to slip behind it from our perspective. If you've been watching Jupiter this year, it's been doing exactly that, moving consistently from east to west and closer to the Sun ever since May 9th.

On the other hand, the inner worlds pass by Earth. They speed away from us, then slip behind the Sun from west to east, re-emerging in Earth's evening skies to the east of the Sun. Of all the planets visible from Earth, the two brightest are Venus and Jupiter, which experience a conjunction from our perspective only about once per year. Normally, Venus and Jupiter will appear separated by approximately  $0.5^\circ$  to  $3^\circ$  at closest approach. This is due to the fact that the Solar System's planets don't all orbit in the same perfect, two-dimensional plane.

But this summer, as Venus emerges from behind the Sun and begins catching up to Earth, Jupiter falls back toward the Sun, from Earth's perspective, at the same time. On August 27th, all three planets—Earth, Venus and Jupiter—will make nearly a perfectly straight line. As a result, Venus and Jupiter, at 9:48 PM Universal time, will appear separated by only 4 arc-minutes, the closest conjunction of naked eye planets since the Venus/Saturn conjunction in 2006.

Seen right next to one another, it's startling how much brighter Venus appears than Jupiter; at magnitude  $-3.80$ , Venus appears some eight times brighter than Jupiter, which is at magnitude  $-1.53$ . Look to the western skies immediately after sunset on August 27th, and the two brightest planets of all—brighter than all the stars—will make a dazzling duo in the twilight sky. As soon as the sun is below the horizon, the pair will be about two fists (at arm's length) to the left of the sun's disappearance and about one fist above a flat horizon. You may need binoculars to find them initially and to separate them. Through a telescope, a large, gibbous Venus will appear no more distant from Jupiter than Callisto, its farthest Galilean satellite.

As a bonus, Mercury is nearby as well. At just  $5^\circ$  below and left of the Venus/Jupiter pair, Mercury achieved a distant conjunction with Venus less than 24 hours prior. In 2065, Venus will actually occult Jupiter, passing in front of the planet's disk. Until then, the only comparably close conjunctions between these two worlds occur in 2039 and 2056, meaning this one is worth some special effort—including traveling to get clear skies and a good horizon—to see!

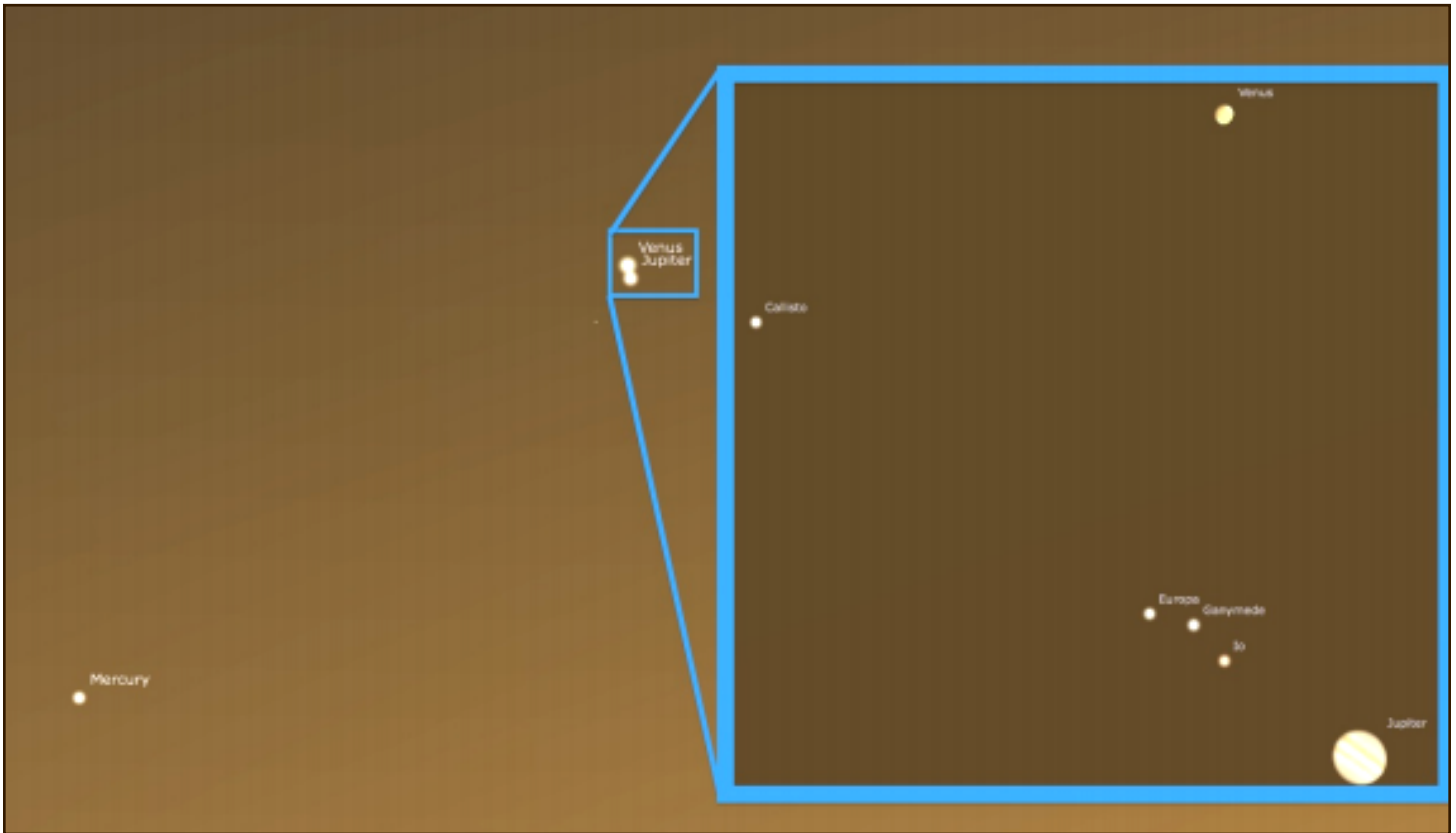


Image credit: E. Siegel, created with Stellarium, of a small section of the western skies as they will appear this August 27th just after sunset from the United States, with Venus and Jupiter separated by less than 6 arc-minutes as shown. Inset shows Venus and Jupiter as they'll appear through a very good amateur telescope, in the same field of view.



# Cosmic Chuckles

moderated by

Dave Moll

*This month's jokes are credited to [storypick.com](http://storypick.com) -DM*

**Did you hear** about the man who got cooled to absolute zero?

He's OK now.

**A mathematician** wanders back home at 3 a.m. and proceeds to get an earful from his wife.

"You're late!" she yells. "You said you'd be home by 11:45!"

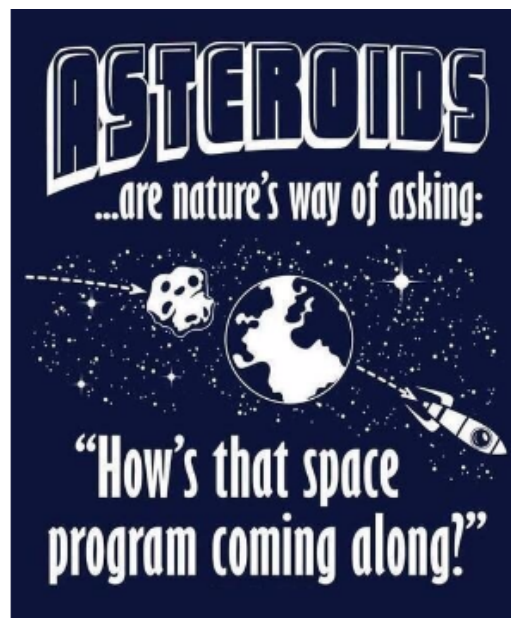
"Actually," the mathematician replies coolly, "I said I'd be home by a quarter of 12."

**A programmer's wife** tells him: "Run to the store and pick up a loaf of bread. If they have eggs, get a dozen." The programmer comes home with 12 loaves of bread.

**A photon checks into** a hotel and the porter asks him if he has any luggage. The photon replies: "No, I'm traveling light."

**Helium walks** into a bar. The bartender says "We don't serve noble gases in here." Helium doesn't react.

**Two chemists go** into a restaurant. The first one says "I think I'll have an H<sub>2</sub>O. The second one says "I think I'll have an H<sub>2</sub>O too" He died.



**What did the scientist say** when he found 2 isotopes of helium?

"HeHe"

**I would** make another chemistry joke but all the good ones ARGON!

*Have an astronomy/science-related joke or cartoon you'd like to share? Send it along to Dave, [Polaris41N@outlook.com](mailto:Polaris41N@outlook.com) or to the Observer editor [editorlvaas@gmail.com](mailto:editorlvaas@gmail.com). Can you do illustrations for this section? Contact [editorlvaas@gmail.com](mailto:editorlvaas@gmail.com).*

# Oh, Snap!

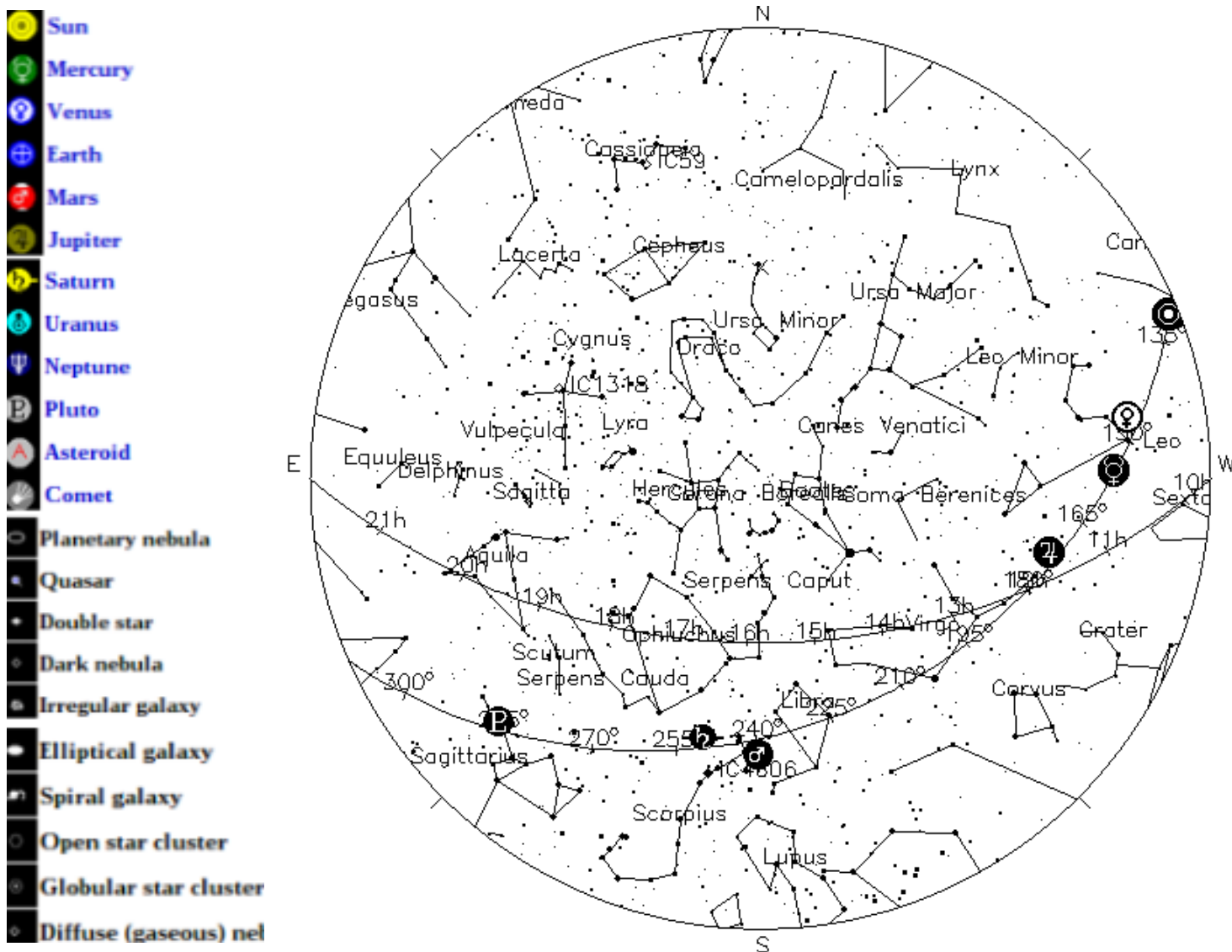
## Perspective

(dedicated to LVAAS astroimager Dave Moll)



*Oh, Snap! is a monthly feature of LVAAS members' astronomy-related works which are generously shared for the enjoyment of our readers. Kindly submit your original photos, videos or other material to [editorlvaas@gmail.com](mailto:editorlvaas@gmail.com)*

# Sky above 40°33'58"N 75°26'5"W at Wed 2016 Aug 3 0:00 UTC



*Your Sky* was implemented by John Walker in January and February of 1998. The calculation and display software was adapted from Home Planet for Windows.

The GIF output file generation is based upon the ppmtogif module of Jef Poskanzer's pbmplus toolkit, of which many other components were used in creating the images you see here.

ppmtogif.c - read a portable pixmap and produce a GIF file

Based on GIFENCOD by David Rowley [[mgardi@watdscu.waterloo.edu](mailto:mgardi@watdscu.waterloo.edu)].

Lempel-Zim compression based on "compress".

Modified by Marcel Wijkstra [[wijkstra@fwi.uva.nl](mailto:wijkstra@fwi.uva.nl)]

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Check out additional features of *Your Sky* at : <http://www.fourmilab.ch/yoursky/>

## AUGUST 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	<a href="#">01</a>	<a href="#">02</a> <a href="#">New Moon</a>	<a href="#">03</a>	<a href="#">04</a>	<a href="#">05</a>	<a href="#">06</a> <a href="#">Star Party</a>
<a href="#">07</a>	<a href="#">08</a>	<a href="#">09</a>	<a href="#">10</a> <a href="#">First Quarter Moon</a>	<a href="#">11</a>	<a href="#">12</a>	<a href="#">13</a> <a href="#">General Meeting 7:00 PM Pulpit Rock</a>
<a href="#">14</a>	<a href="#">15</a>	<a href="#">16</a>	<a href="#">17</a>	<a href="#">18</a> <a href="#">Full Moon</a>	<a href="#">19</a> <a href="#">Boy Scouts - Minsi Trails Council - Powderhorn Training</a>	<a href="#">20</a> <a href="#">Boy Scouts - Minsi Trails Council - Powderhorn Training</a>
<a href="#">21</a> <a href="#">Boy Scouts - Minsi Trails Council - Powderhorn Training</a>	<a href="#">22</a>	<a href="#">23</a>	<a href="#">24</a> <a href="#">Last Quarter Moon</a>	<a href="#">25</a>	<a href="#">26</a>	<a href="#">27</a>
<a href="#">28</a> <a href="#">LVAAS Board of Governors Meeting</a>	<a href="#">29</a>	<a href="#">30</a>	<a href="#">31</a>			

## SEPTEMBER 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				<a href="#">01</a> <a href="#">New Moon</a>	<a href="#">02</a>	<a href="#">03</a>
<a href="#">04</a>	<a href="#">05</a>	<a href="#">06</a>	<a href="#">07</a>	<a href="#">08</a>	<a href="#">09</a> <a href="#">First Quarter Moon</a>	<a href="#">10</a> <a href="#">Star Party</a>
<a href="#">11</a> <a href="#">General Meeting - South Mountain</a>	<a href="#">12</a>	<a href="#">13</a>	<a href="#">14</a>	<a href="#">15</a> <a href="#">Astro Imaging</a>	<a href="#">16</a> <a href="#">Full Moon</a>	<a href="#">17</a>
<a href="#">18</a>	<a href="#">19</a>	<a href="#">20</a>	<a href="#">21</a> <a href="#">LVAAS Scout Group - South Mountain</a>	<a href="#">22</a> <a href="#">LVAAS Scout Group - South Mountain</a>	<a href="#">23</a> <a href="#">Last Quarter Moon</a>	<a href="#">24</a>
<a href="#">25</a> <a href="#">LVAAS Board of Governors Meeting</a>	<a href="#">26</a>	<a href="#">27</a>	<a href="#">28</a>	<a href="#">29</a>	<a href="#">30</a> <a href="#">MegaMeet</a> <a href="#">New Moon</a>	

# 2016 LVAAS Event Calendar

2016 LVAAS Event Calendar												
	Sundays			Thursday	Saturdays		Monday	Multi-Day Weekends Scouts at Pulpit R.	Moon Phase			
	General Meeting	Board meeting		Astro-Imaging		Star Parties	Scouts at S. Mountain		New	First	Full	Last
<b>January</b>	2:00 PM 10-m	31		21		no mtg		no camping	9	16	23	2 31
<b>February</b>	2:00 PM 14-m	28		25		13		no camping	8	15	22	
<b>March</b>	13	20		24		19		no camping	8	15	23	1 31
<b>April</b>	10	24		21		16		22-24	7	14	22	29
<b>May</b>	15	22		19		14		20-22	6	13	21	29
<b>June</b>	12	26		no mtg		11		24-26	4	12	20	27
<b>July</b>	05:00 PM 9-s	31		no mtg		16		15-17	4	11	19	26
<b>August</b>	13-sp	28		no mtg		6		19-21	2	10	18	24
<b>September</b>	11	25		15		10		16-18	1 30	9	16	23
<b>October</b>	9	30		13		8		14-16	30	9	16	22
<b>November</b>	2:00 PM 13	27		17		5		11-13	29	7	14	21
<b>December</b>	2:00 PM 10-sc	18		15		3		no camping	29	7	13	20

(-s) = Saturday meetings - Rain date on Sunday  
 (-m) = Muhlenburg College  
 (-sp) = Saturday meeting at Pulpit Rock  
 (-sc) = Saturday Holiday Party at Grace Community Church  
**All meetings 7:00 PM unless noted otherwise**

Contributed by Bill Dahlenburg

## Publishing images is a balancing act!

When preparing your images for publication in The Observer, please consider the following guidelines:

### Put the quality in:

- ▶ Considering the "print" size of the image, make sure you have at least 150 pixels/inch.
- ▶ Use a reasonably good quality for the JPEG compression ratio.

### But watch the "waistline"!

- ▶ Don't go too much above 200 pixels/inch max.
- ▶ Use the lowest JPEG quality that still looks good!
- ▶ Shoot for <300KB for a 1/2 page image or <600KB for a full page.

**Tip:** If you're not Photoshop-savvy, you can re-size and compress undemanding images ("human interest", not astro-images), with an online tool such as <http://www.ivertech.com/freeOnlineImageResizer/freeOnlineImageResizer.aspx> . It will also tell you the pixel size and file size of your original, even if you don't download the processed copy.

If all else fails, trust The Observer's photo editor, Dave Moll, to edit your image for publication. He's a bit of a wizard.

The Observer is the official monthly publication of the Lehigh Valley Amateur Astronomical Society (LVAAS) Inc., 620-B East Rock Road, Allentown, PA, 18103 and as of June 2016, is available for public viewing. Frances A. Kopy, [editorlvaas@gmail.com](mailto:editorlvaas@gmail.com)

Members please use above email address for submissions.

Photo editor is Dave Moll, [Polaris41N@outlook.com](mailto:Polaris41N@outlook.com)

Society members who would like to submit an article or photo for publication should kindly do so by the Sunday before the monthly meeting of the BOG (please see calendar on website) for the article to appear in the upcoming month's issue. PDF format is preferred. Early submission are greatly appreciated. Articles may be edited for publication. Your comments and suggestions are invited.

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