

# The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

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Volume 58 Issue 1



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

Well, it's official, a lunatic has been sworn in as Director of LVAAS, and here is the photograph to prove it. There I am together with Gwyn Fowler (Treasurer,) Rich Hogg (Assistant Director) and Earl Pursell (Secretary) making a promise that we will do our jobs to the best of our ability and keep to the bylaws of the society. *And, we mean it too!*

Before I go any further, I have to give a **BIG THANK YOU** to the outgoing officers, Rich Hogg (Director,) Sandy Mesics (Assistant Director) and Ron Kunkel (Secretary.) Not only did they carry out their duties as elected officers, they also did (and still do) numerous other things for the society. As well as being Director, Rich has done a lot of work on both the 18" and 40" telescopes at Pulpit Rock. He is also our webmaster and is in the process of transferring our website from Bluehost to Dreamhost - a less expensive provider. I am so grateful that he agreed to be Assistant Director because I know I will be seeking his advice throughout the year.

Sandy is the person responsible for getting speakers for our general meetings and thankfully she has agreed to continue doing this for next year. She also writes a column for The Observer.



LVAAS Officers are sworn in by Bill Dahlenburg. (L-R): Bill, Gwyn Fowler, Carol Kiely, Rich Hogg and Earl Pursell.

Ron is in charge of all the maintenance at Pulpit Rock and does a lot of it himself. He also hosts scout groups who set up camp there every month on full moon weekends throughout the year. Ron also writes a column for The Observer and often gives talks at general meetings and star parties.

Although the new officers get sworn in at the holiday party, the official changeover takes place on December 1st. I would like to thank everyone who sent me an e-mail telling me to change the date of

the holiday party from the Saturday to the Sunday. There was a good turn out, and everyone was in the holiday spirit. Because the holidays are such a busy time, I decided to hold a Board Meeting at the Grace Community Church Hall before our holiday party. All the relevant reports were submitted beforehand so it was one of the shortest meetings on record! Then the festivities began.

Thank you to all who brought some food along. John LaShell was presented with a cake to wish him good luck and “Godspeed” on his move to North Carolina. And of course, he invited everyone to have a slice. John has been an LVAAS member for many years and helped run the telescope-making group. He has also been involved in several outreach activities, one of the more recent being “The Science Fun Night” at East Hills Middle School in Bethlehem, where he explained to visitors that there is no such thing as zero gravity, as gravity is all around us, even for astronauts in the International Space Station. We are also indebted to John for allowing us to hold our Holiday Parties in the church hall.

**John, we’ll miss you. Please keep in touch!**



John prepares to cut his cake at the holiday party.



His talk was all about the collaboration between two famous physicists: the soft-spoken John Wheeler and the boisterous Richard Feynman. At right is a photograph of one of Paul’s slides depicting some of the wild antics of Feynman. After his talk, Paul offered to sign copies of his latest book, "The Quantum Labyrinth."





If you think about it, 2017 has been an amazing year for both astronomy and our society. On August 17th, the world of physics and astronomy changed when a gravitational wave detected by the Laser Interferometer Gravitational-wave Observatory (LIGO) in Louisiana was immediately followed (1.74 seconds later) by a bright flash of gamma rays detected at the Fermi Gamma-ray Space Observatory. It was later confirmed that both signals were generated by a collision between two neutron stars. Then on August 21st, one of nature's greatest spectacles, a total solar eclipse, was observed right across the United States. I know many of you traveled to see it for yourselves. Below, on the left, is a beautiful photograph taken by Bob Mohr of the solar eclipse in Kentucky - *thank you Bob for sharing it with everyone!*



Photo credit: Bob Mohr

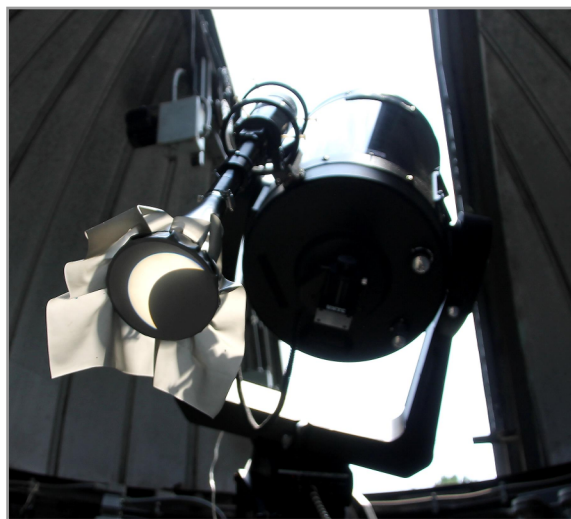


Photo credit: Lisabeth Hughes

For LVAAS members and friends who couldn't travel to an area of totality, we organized a solar party at South Mountain. Above right is an image of the partial eclipse projected onto the screen of a funnel viewer attached to the 14" by Pete Brooks - *thank you Pete!*

Then we celebrated LVAAS's 60th Anniversary by holding a banquet in Lehigh University's Wood Dining Room. Bonnie Buratti spoke about her role in the Cassini Mission and showed some spectacular images of Saturn, its rings and several of its moons. We could not have asked for a better speaker. Here is Bonnie holding the commemorative plaque presented to her by the society. She later sent me an email thanking LVAAS for the plaque and the honorary membership. She also promised to return in 2018 to give another talk. She finished her email with, and I quote,



***"You are the best astronomy club ever!!"***

The other really cool thing that happened this year was that Bryan Jolley donated the slice of an iron meteorite that he had won as a door prize during LVAAS's 45th anniversary celebration back to the club on the proviso that we show it to people at star parties.

According to Robert A Haag (The Meteorite Man) the slice originally came from a 3-ton specimen recovered from Cape York, Greenland, in 1982. It was spotted by a native fisherman in the shallow waters of a bay which was usually frozen over. It was then transported to Denmark. When Rich showed it to everyone at a board meeting, it was clear it needed a little TLC, so I offered my services. I also suggested that I persuade the Director of Lehigh University's Electron Microscopy Facility, whom I



just happen to know pretty well, into allowing me to do some microscopy and elemental analysis on the piece. He said, "Yes." Here is one side of the slice after cleaning. It had been etched to bring out the Widmanstätten pattern, a characteristic of iron meteorites. The darker region at the top is troilite, a form of iron sulfide rarely found on Earth. In order to carry out some elemental analysis, I had to polish the other side so it looked like a mirror. Bryan came along to see one of the microscopes acquiring an elemental map of the surface. As well as iron and nickel, there were lots of other elements including phosphorus, chromium and silicon, and the microstructure is fascinating. As soon as I am finished analyzing the slice, I will give a talk all about it and will arrange a tour of Lehigh's Microscope Facility for those who are interested.



The 3-ton specimen found in the ice was only a small fragment of the massive meteorite that landed in Greenland 10,000 years ago. Three much larger pieces are on display in The American Museum of Natural History in New York so, of course, Chris and I had to go see them. Here is Chris touching the largest piece, known to the Inuit as Ahnighito

(the tent.) It weighs over 31 tons and the supports you see underneath go straight down to the bedrock beneath the museum.



So what do we have to look forward to in January 2018? Well, as a self-proclaimed incurable lunatic, I couldn't be more pleased. because there are two super moons in January and one of them coincides with a partial eclipse (photos please!) which will be visible from 6:48 a.m. to 7:17 a.m. on January 31st reaching a maximum at 7:07 a.m. But that's just the start. If the weather gods cooperate, the January sky is a treasure trove of celestial objects.

Just a reminder: The **January General Meeting** will be held on **Sunday, January 14th at 2:00 p.m.** in the **Trumbower Science Building, Muhlenberg College in Allentown.** I hope to see you there.

Ad astra,

Carol (Carol Kiely, Director)

***P.S.***

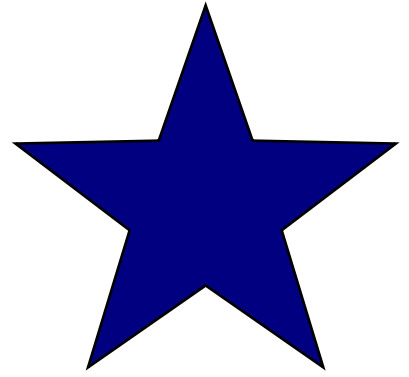
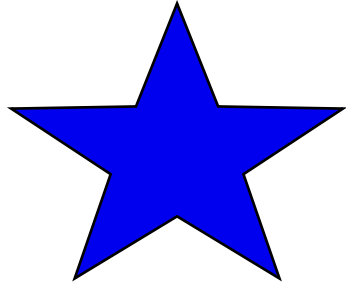
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I have just constructed this astronomy Wordoku - well, there are lots of stars that could go supernova in the January sky and a few remnants of some that already have. At the January General Meeting, all the correct solutions will be collected and the person who completed the one drawn out of the hat will win a prize.

Good luck,

Carol



# **2018**

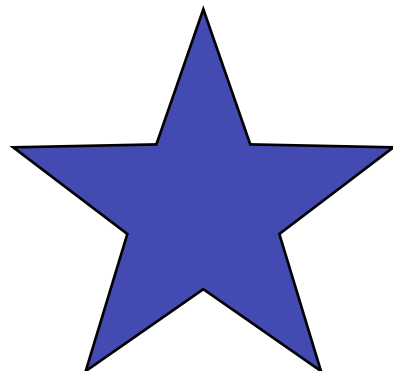
## **Is Here!**

**It's time to renew your LVAAS membership. Support from our members covered about 40% of our annual budget last fiscal year, so your financial support is very important. Keep LVAAS going strong into its 61st year. If you haven't already done so, please renew as soon as possible to remain in good standing.**

**Dues can be paid in person at General Meetings or can be mailed to our membership chair. A renewal form with mailing address can be downloaded at this link:**

**[http://lvaas.org/filemgmt\\_data/files/2018\\_Membership\\_Renewal\\_Form.pdf](http://lvaas.org/filemgmt_data/files/2018_Membership_Renewal_Form.pdf)**

**Thanks for being a member of LVAAS!**





## **Minutes for the LVAAS General Meeting - 10 December 2017**

The December 2017 LVAAS General Meeting (aka Holiday Party) was held on December 10, 2017 at Grace Community Church in Allentown. The meeting was preceded by the December Board of Governors' Meeting. The General Meeting started at about 2:00 p.m. and began with a pot-luck buffet provided by the members. After the meal, a special public acknowledgement, complete with cake and card, was made for John LaShell, pastor of Grace Community Church and LVAAS member, who will be retiring and moving to North Carolina shortly. His presence will be greatly missed.

The speaker for the event was Paul Halpern, professor of physics at the University of Sciences in Philadelphia, and author of *The Quantum Labyrinth: How Richard Feynman and John Wheeler Revolutionized Time and Reality*. The talk focused on the collaborations and friendship between Feynman and Wheeler throughout their professional and personal lives. The author had copies of his book for sale and autographing. The talk and follow-up questions lasted from 3:00 to 4:00 p.m.

After a short break, Bill Dahlenburg, Election Search Committee Chair, swore in the newly-elected officers: Director - Carol Kiely, Assistant Director - Rich Hogg, Treasurer - Gwyn Fowler, and Secretary - Earl Pursell. The induction was followed by comments by our new Director, Carol. She reminded everyone that our Public Relations Director, Eric Loch, was looking for volunteers for an event at Wehr's Mill Dam Park in Allentown on the evening of Dec 16. Also, the General Meetings for Jan, Feb, and March will be held at Muhlenburg College, Trumbower Hall, at 2 p.m. The next meeting will be January 14. There will be an Astroimaging group meeting at South Mountain on January 4 at 7 p.m. There will be no more Star Parties until March of 2018.

Scott Fowler, Membership Chair, conducted the readings of new members. Brian Becklin and Pete Lamana had their first readings. There were no second readings. He also reminded everyone that it is membership renewal time again, and that members could renew at the meetings or get the form from the website and mail him the form and payment. Gwyn Fowler, Treasurer, reminded everyone that subscriptions to the magazines *Astronomy* and *Sky & Telescope*, if placed through the club, can be obtained at a discount from the normal price.

The meeting was adjourned, but several members remained to help clean up and to have one last talk with John LaShell before he heads South.

Minutes recorded and submitted by Earl Pursell, Secretary.

# LVAAS General Meeting

Sunday, Jan. 14, 2:00 p.m.

Trumbower Science Building

Muhlenburg College, Allentown, PA

## Baryons and Dwarf Galaxies in Cosmological Simulations

*presented by*

**Sheehan Ahmed**

Visiting Assistant Professor, Lafayette College



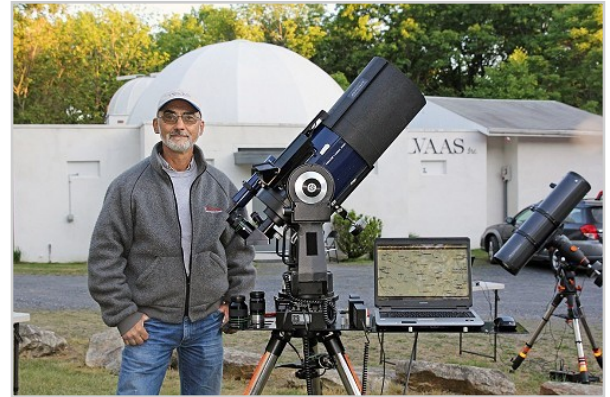
*"Cosmological simulations give us incredible insight into the formation of galaxies and galactic structures, both large and small. My talk will discuss how the inclusion of baryonic physics in dark matter-only simulations affects satellite galaxies, focusing on the formation of planes of satellite galaxies around Milky Way-sized galaxies. Additionally, there have been discoveries of numerous satellite galaxies around dwarf galaxies and I will discuss how the presence of baryons affect the kinematics of these in our simulations."*

"I did my schooling in Bangladesh, then came to the U.S. for undergrad studies at Fordham University, NY, in 2007. B.S. in physics in 2011. Moved to NJ for grad school at Rutgers. Started working with Dr. Alyson Brooks looking at cosmological simulations, focusing on dwarf/satellite galaxies, planes of satellites, etc. Defended thesis in Aug 2017 ("An Investigation into the Effects of Baryons on Satellite Galaxies in Cosmological Simulations.") Started a VAP position at Lafayette 3 days after defense. And here we are. Currently investigating satellites of dwarf galaxies ('dwarfs around dwarfs'.)"



# 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.*



## The Milky Way's Hydrogen Halo

In a typical spiral galaxy like the Milky Way, the prominent features -- the central bulge, the disk with its spiral arms, and the spherical halo with its field stars -- only account for about ten percent of the mass of the galaxy. The remaining ninety percent of the mass is suspected to be dark matter, a postulated but not yet directly observed form of matter. The existence of this dark matter is inferred from the motions of stars within the galaxy and the motions of dwarf galaxies orbiting the Milky Way. The dark matter is thought to reside in a more or less spherical halo that extends 250,000 to 750,000 light years from the center of the galaxy.

From CMB (cosmic microwave background) measurements the ratio of normal (baryonic) matter to dark matter is well known, and thus astronomers have a good idea of how much baryonic matter should be present in the spherical halo that contains the field stars and the dark matter. But when astronomers add up all the things they can see -- field stars and some high velocity hydrogen cloudlets -- they only tally about half of the baryonic matter expected. There is thus a lot of baryonic matter in the spherical halo of the galaxy that has never been detected. Additionally, computer simulations of galaxy formation and interactions predict a vast spherical halo of atomic hydrogen to surround the visible galaxy. It has never been detected.

Now astronomers, Zhang and Zaritsky, from the University of Arizona, using a very extensive and ingenious spectroscopy technique, have found a vast diffuse hydrogen gas, aka single atomic hydrogen, not molecular hydrogen, that engulfs the entire galaxy. Their technique involved analyzing the spectra of 732,225 other galaxies from the Sloan Digital Sky Survey, looking for the narrow spectral line called hydrogen alpha, indicative of neutral atomic hydrogen.

The galaxies surveyed came from all directions relative to the Milky Way. The hydrogen detected in these spectra is not moving with respect to the Milky Way, it is more or less stationary, simply engulfing the entire galaxy. This diffuse hydrogen halo is thus a very large part of the missing Milky Way's baryonic mass.

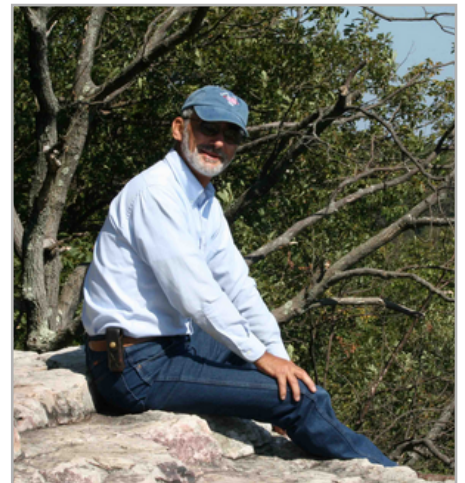


*What our Milky Way might look like to alien astronomers: This image of NGC 2683, a spiral galaxy also known as the "UFO Galaxy" due to its shape, was taken by the Hubble Space Telescope. Since trying to find out what the Milky Way looks like is a bit like trying to picture an unfamiliar house while being confined to a room inside, studies like this one help us gain a better idea of our cosmic home. Credit: ESA/Hubble & NASA*

#### References:

Milky Way: Hydrogen halo lifts the veil of our galactic home. (April 18, 2017.) Retrieved from: <https://www.sciencedaily.com/releases/2017/04/170418111504.htm>.

The end of my ramblings until next month. Ron Kunkel





# Schlegel Observatory Report

by Rich Hogg — January 2018



Truth be told, there is not a lot to report this month. We are continuing to work on fixing the attachment of the mount to the pier on the south side of the scope. Frank Lyter has obtained the hardware and done the machining to create the nested bolt system, a 1/2" bolt threading into a 1" bolt, that we showed in last month's article, and we all took a look at it at the club's Holiday party. Little else has been accomplished since we are all busy with the Holiday season, end-of-year activities, and (in my case) migrating the Ivaas.org website to a new host.

But there is one little adventure story that I can tell you...

## ***A Night on Blue Mountain?***

This time of year it is hard to get a crew together at the site, so I am trying to do some engineering to enable us to make the most of our time when we are able to do some work. I think it will help us to know, as precisely as possible, what we want to do ahead of time. To that end, I decided that I want to make more complete and accurate measurements of the various pieces that form the top of the pier, and the bottom of the mount that interfaces with it.

Tuesday, December 5 looked like it would be the last "warm-ish" day for a while. A bit of rain was called for, but not too much. I grabbed my clipboard and my tape measure and headed for The Rock shortly after 2 p.m., a little later than I had hoped. Nobody else was available to help out that day, so it would be a solo effort.

I did quite a bit of careful measuring and note-taking while listening to the pitter-patter of raindrops on the metal dome. As I had hoped, the temperature was not too low, and I was comfortable in several layers of the mostly fleece kind of stuff I like to wear when I'm working. I was at it for 3 hours or so, and at about 7:30 I packed up and got ready to leave.

Well, when I got to the door and looked out, I was a bit surprised by one thing - apparently I was not under the rain cloud, but right in it! Not only was it dark, but also kind of foggy. I would soon appreciate what an understatement that is.

I like it dark and I usually try to navigate around without using a flashlight when I can. In this case, I had parked my Jeep only about 10 feet from the door, so I figured I would see it emerge from the mist as I walked toward it. As I walked right into it.

Well, at least I found it, so I got loaded up and ready to roll. It was raining, but not too hard, and since I had recently been issued new keys for the roll-off and the 18", I wanted to make sure they worked. So I decided to drive over there so I could see by my headlights while I tested them.

I could see just a bit of grass through the fog, by the light of my low beams, so I started rolling. Whoops, maybe a little too fast, so I pressed gently on the brake, then harder... and harder... and I was still rolling down the gentle hill outside the 40". Except I wasn't; I had never got the car moving at all, but the way the ground looked through the rain and the fog somehow convinced me that I was moving. It was turning into a very weird evening, and I was learning that my normal habits needed some adjustments.

I realized that I had no idea which way to go, so I set the brake and stepped out into the rain to look around. OK, the pier in the middle of the field is over that way, and the roll-off is over there -- driving my SUV as if navigating a submarine through a murky swamp, somehow I managed to get to the roll-off, and then to the 18" to try my keys.

Then it was time to creep across the grass until I found the road. But I found the 40" observatory again, crossing the road without even realizing it. I turned to the right to go past it and spied the electrical service pole with the guy wire that lies between it and the drive, so I knew if I went around that I would be on the road. Then the challenge would be to stay on it.

At this time, I learned what a wonderful thing fog lamps can be. These were the conditions that made them necessary; with the fog lamps on and the headlights off, I was able to see the edges of the road most of the time, just barely, as long as I didn't exceed about 2mph. I did not want to end up in the ditch! It probably took me over half an hour to get to the gate, but at least I got there.

I still remember how eerie it looked going across the bridge in the fog. It was a little less dense at the bottom of the hill, but not much. Fortunately, once I got out of the woods it was clear enough to drive home without issue.

But if that fog had been any more dense, I might have had to spend the night on top of the mountain. And last month, I got a flat tire leaving the site! I think I will put together a bit of a survival/comfort kit to keep in my car, just in case: some snacks and some drinks and a means of keeping warm. I enjoy going to Pulpit Rock, and I'm careful enough that I consider it safe, but sometimes the unexpected happens and you just might not be able to leave in a hurry without taking chances.

***Current Status and Activities:*** We're still working on fixing the attachment of the mount to the pier on the south side.



by Gary A. Becker



## **Moravian Donor Attains Immortality**

On January 1, 1801 Giuseppe Piazzi (1746-1826), an Italian astronomer on the island of Sicily, was compiling a new star catalog. Piazzi noted the position of a luminary which on the next night was not present. However, a similar star was observed near to the original star's location. Piazzi initially thought that he had discovered a new comet when, in fact, it was a new planet. He named it Ceres, for the Roman goddess who gave agriculture to humankind.

Then another "planet," Pallas, was discovered on March 28, 1802, and then another on September 1, 1804. A fourth "planet" came into telescopic view on March 29, 1807. It became obvious after Pallas that these objects were representative of a new classification of smaller solar system bodies called asteroids (little stars). By the early 1990's there were thousands of them known and a few dozen that had orbits which crossed the Earth's path and could create havoc if they impacted.

Then on March 24, 1993, a startling discovery was made by Eugene and Carolyn Shoemaker and David Levy. Calculations showed that Comet Shoemaker-Levy 9 was fragmented and in orbit around Jupiter, and would hit Jove between July 16-22, 1994. The enormity of the energy released by the 20 impacting fragments dwarfed all expectations made by professional astronomers and set into motion a concerted effort by experts to discover and map the orbital paths of as many asteroids as possible in the hopes of discovering all Earth-crossing members. Today, we know of over 16,000 of them. Most are negligibly small, with about 7000 large enough to create localized damage including loss of life. Eleven-hundred of them are larger than 0.6 mile and could create real problems if they struck the Earth.

The heyday of asteroid discoveries by amateurs was in the late 90's, and it was at this time (1997) that James Robinson Bruton, a former student of Kutztown University astronomy professor and Moravian College donor, Dr. Carlson R. Chambliss, discovered two asteroids, one of which he named after Chambliss. Carlson was also my astronomy professor when I studied at Kutztown University (1968-72). Chambliss has underwritten about half of the funding for Moravian's 25 percent usage time for the MDRS Robotic Observatory near Hanksville, Utah.

Jim was also my student teacher at the Allentown School District Planetarium during the fall semester of 1983. His genuine interest in astronomy and his unique perspectives in teaching difficult concepts earned him an evaluation of outstanding.

When Jim first observed 23707 Chambliss on October 4, 1997, he was working as a science teacher in Chinle, Arizona on a Navajo reservation. This non-spherical, main belt, silicate asteroid, 7.198 km at its greatest length (4.5 mi.) has an orbital period of 5.53 years. It rotates once every 5 hours, 4 minutes. More importantly, 23707 Chambliss has been modeled photometrically. We know its general shape, and if you would like to see it for yourself, go to <https://space.frieger.com/asteroids/asteroids/23707-Chambliss>.

If you are into immortality, having an asteroid named for you is a wonderful way to be celebrated. Congrats, Dr. Carlson R. Chambliss, on this exceptional and deserved honor.

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



*From the LVAAS Archives:*

## **1968: “May their union have serendipity”**

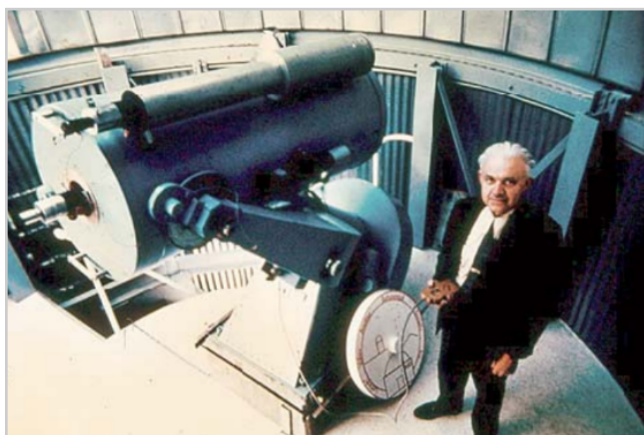
*by Sandy Mesics*

Ernie Robson, Director of LVAAS in 1968, remarked on the state of astronomy in the February 1968 Observer:

“Since 1957 (Sputnik year) when this society was founded, amateur groups in this country have been, and still are, undergoing several far-reaching changes:

1. Telescopes are becoming larger. We have three 12-inch scopes and three 10-inch scopes now operating in the LVAAS. Soon we hope to have a 20-inch telescope.
2. The designs of amateur scopes are becoming more sophisticated. We have one 12-inch Cassegrain, two Schmidts, one Maksutov, and members are planning more of these.
3. As a result of sky illumination that follows the population, backyard astronomical observation is becoming increasingly difficult. Sheltered locations are now being sought by amateur astronomers in Harrisburg, Flemington, NJ, and Philadelphia. They are attempting to do what we are doing at Pulpit Rock.
4. Because of the post-Sputnik upgrading of US scientific instruction on ALL school levels and because high schools are building planetaria, today’s amateur astronomy societies are attracting an increasing number of science teachers and many more scientifically sophisticated youngsters. Some professional bodies are taking amateur cooperation more seriously (the new sites are an influence here too.) The US Naval Observatory is looking closely at the potential of these new sites. Because of the Space Program, the public, too, becomes more interested in astronomy.
5. The cost of this development is likely to require more community support than heretofore; witness the New Jersey Society’s connections with industry and the state Government.

“In short: to stay abreast with change is what our ‘new’ policy means to me. This does not exclude backyard astronomy! We seek as many home stations as possible, if for no other reason than convenience. Witness the usefulness of Jeff Shaffer’s observatory. What we now have is a refuge on Pulpit Rock for equipment such as Jeff’s... when lights start to obliterate visibility.



**Fig. 1: Ralph Schlegel with the 20-inch telescope**



“Our primary tasks for 1968, as I see them, are: increased participation in work and observation on Pulpit Rock. The work is the building of the 20-inch scope’s observatory. Another task is the rejuvenation of the Astronomy Study Group. A third and most interesting goal is completion and operation of the new spectrohelioscope. We owe our instrument makers a great deal as well as our observers. May their union have serendipity.”

A lot of this holds true today:

1. While the number of LVAAS telescopes has increased since 1968, their relative apertures haven’t changed drastically: we now have two 12-inch Newtonian scopes, a 12-inch SCT, a 17-inch Newtonian, a 14-inch Schmidt Cass, an 18-inch Cassegrain, and hopefully soon a 40-inch Cass. Perhaps one of the reasons there aren’t larger scopes was referred to in Ernie’s point #3: sky conditions don’t really warrant large instruments any more.
2. Telescope making is now a niche hobby. The ready retail availability of sophisticated scopes now includes apochromatic refractors and Ritchey-Chretien optical systems, not even imagined in 1968. Schmidts and Maksutovs aren’t all that “sophisticated” anymore.
3. The astronomy clubs Ernie mentioned all secured “dark sky” sites: The Flemington group became the New Jersey Astronomical Association (NJAA). They have an observing site in Vorhees State Park near High Bridge. Harrisburg has the Naylor Observatory, and the Rittenhouse Astronomical Society in Philadelphia has a site called Muddy Run Observatory in Southern Lancaster County (Holtwood, PA.) Arguably of these sites, Pulpit Rock is probably the best dark sky site, but none are truly outstanding.
4. After the lunar landing in 1969, high schools began the process of phasing out planetaria. A notable holdout was the ASD Planetarium at Dieruff High School. Some colleges and universities still operate planetaria, as well as Broughal Middle School, but for the most part the trend is declining, despite the increased sophistication of projection methods and special effects.
5. Partnering for community support has indeed benefited astronomy clubs: Not only the aforementioned NJAA, but the United Astronomy Clubs of New Jersey (UACNJ) have both benefited from cooperation with State governments. LVAAS did receive a government grant for equipment, and a fair amount of financial support from both the National Park Service and for right of way rentals at Pulpit Rock.

Backyard astronomy has largely morphed into amateur astronomers taking sophisticated, portable equipment to dark skies to observe and image. While some folks still are able to haul a scope out of the garage and into the back yard, light pollution has largely hindered this activity.

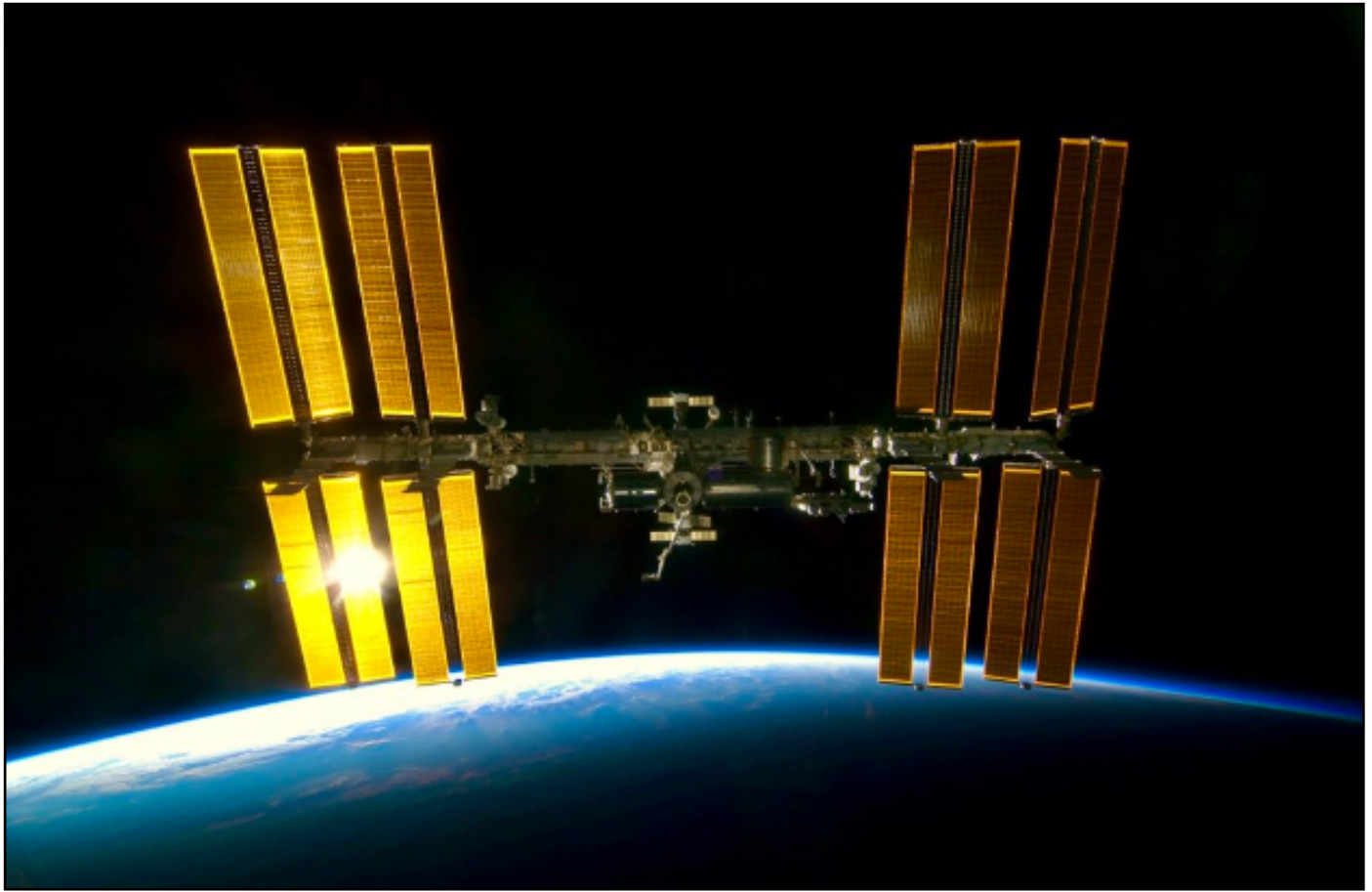
In 1968, there were very few events at dark skies sites, whereas in 2018, you could spend an entire year traveling from one observing event to another.

So what about the next 50 years? Hard to say. Unless there is a nationwide concentrated effort to reduce light pollution, skies are likely to continue to deteriorate. Improvements in imaging technology may eventually make looking through an eyepiece a thing of the past. Perhaps adaptive optics will become standard in amateur instruments. Imagine setting up a telescope outside by plopping it down, switching it on, and going inside to “observe” on a large flat screen while the scope operates itself. Sounds great, especially on these cold winter nights!

#### References

The Observer, February 1968.

# *Revolutions, Resolutions...*

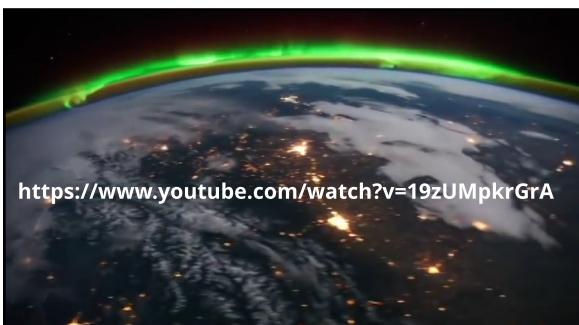


**Doug Wheelock**  @Astro\_Wheels · 31 Dec 2017

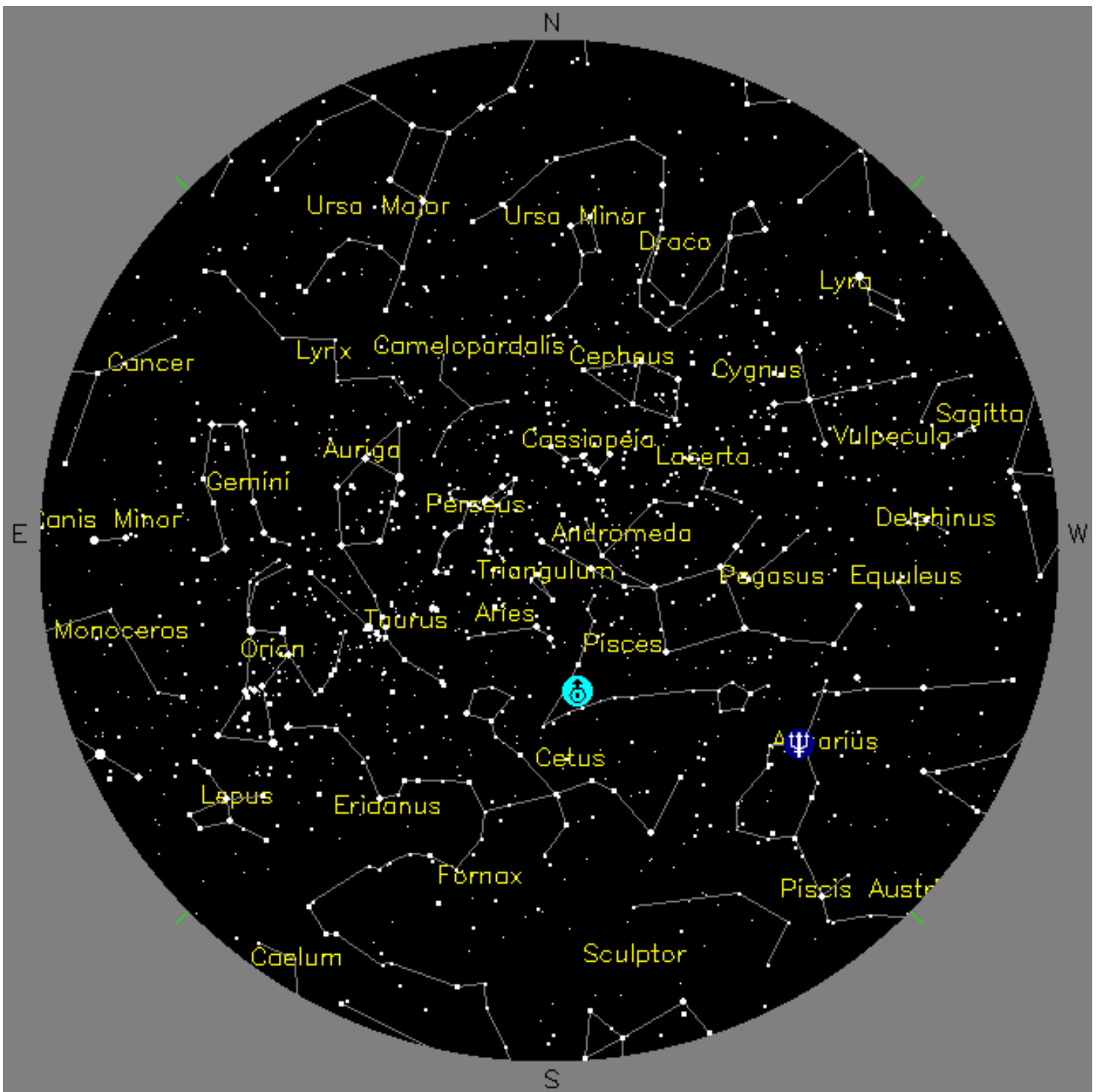
Dear 2018,

Welcome to our imperfect world. We've made a mess, so thank you for the gift of a blank canvas. In those moments when we lose perspective in selfish arrogance, remind us that we are all wonderfully made. Help us to walk gently, to speak kindly, and to love fearlessly.

*Source: Twitter*



## Sky above 40°33'58"N 75°26'5"W at Fri Jan 5 2018 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@watdsu.waterloo.edu](mailto:mgardi@watdsu.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/>



## JANUARY 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	<a href="#">01</a> <a href="#">Full Moon</a>	<a href="#">02</a>	<a href="#">03</a>	<a href="#">04</a> <a href="#">Astro Imaging 7:00 PM</a>	<a href="#">05</a>	<a href="#">06</a>
<a href="#">07</a>	<a href="#">08</a> <a href="#">Last Quarter Moon</a>	<a href="#">09</a>	<a href="#">10</a>	<a href="#">11</a>	<a href="#">12</a>	<a href="#">13</a>
<a href="#">14</a> <a href="#">General Meeting - 2:00 PM</a> <a href="#">Muhlenberg</a>	<a href="#">15</a>	<a href="#">16</a> <a href="#">New Moon</a>	<a href="#">17</a>	<a href="#">18</a>	<a href="#">19</a>	<a href="#">20</a>
<a href="#">21</a>	<a href="#">22</a>	<a href="#">23</a>	<a href="#">24</a> <a href="#">First 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</a> <a href="#">Meeting</a>	<a href="#">29</a>	<a href="#">30</a>	<a href="#">31</a> <a href="#">Full Moon</a>			

## FEBRUARY 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				<a href="#">01</a> <a href="#">Astro Imaging 7:00 PM (</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="#">Last Quarter Moon</a>	<a href="#">08</a>	<a href="#">09</a>	<a href="#">10</a>
<a href="#">11</a> <a href="#">General Meeting - 2:00 PM</a> <a href="#">Muhlenberg</a>	<a href="#">12</a>	<a href="#">13</a>	<a href="#">14</a>	<a href="#">15</a> <a href="#">New Moon</a>	<a href="#">16</a>	<a href="#">17</a>
<a href="#">18</a>	<a href="#">19</a>	<a href="#">20</a>	<a href="#">21</a>	<a href="#">22</a>	<a href="#">23</a> <a href="#">First Quarter Moon</a>	<a href="#">24</a>
<a href="#">25</a> <a href="#">LVAAS Board of Governors</a> <a href="#">Meeting</a>	<a href="#">26</a>	<a href="#">27</a>	<a href="#">28</a>			

# 2018 LVAAS Event Calendar

2018 LVAAS Event Calendar												
	Sundays			Thursday	Friday	Saturday	Mondays	Multi-Day Weekends	Moon Phase			
	General Meeting time	location	Board meeting	Astro-Imaging	Lunatics and Stargazers	Star Parties	Scouts at S. Mountain	Scouts at Pulpit R.	New	First	Full	Last
January	2:00 PM	14 Muhlenberg	28	4		no mtg		no camping	16	24	1 31	8
February	2:00 PM	11 Muhlenberg	25	1		no mtg		no camping	15	23		7
March	2:00 PM	11 Muhlenberg	25	1		24		30-31-1	17	24	31	9
April		8 S.M.	29	5		21		27-28-29	15	22	29	8
May		6 S.M.	20	3		19		25-26-27	15	21	29	7
June		10 S.M.	24	no mtg		23		29-30-1	13	20	28	6
July	5:00 PM	7 S.M.	29	no mtg		21		27-28-29	12	19	27	6
August	7:00 PM	11 Pulpit	26	no mtg		18		24-25-26	11	18	26	4
September		9 S.M.	30	27		15		21-22-23	9	16	24	2
October		14 S.M.	28	25		13		26-27-28	8	16	24	2 31
November	2:00 PM	11 S.M.	25	29		17		no camping	7	15	23	29
December	2:00 PM	8 Grace Corn	30	20		no mtg		no camping	7	15	22	29

July, Aug & Dec are Saturday meetings with rain date on Sunday  
 Jan, Feb & March meetings are at Muhlenberg College  
 August meeting is at Pulpit Rock  
 December meeting / Holiday Party is at Grace Community Church

NEAF  
 Cherry Springs S.P.  
 Stellafane  
 Black Forest  
 Mega Meet

April 21-22  
 June 14-17  
 August 9-12  
 September 7-9

## 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 astroimages), 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.

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Members please use above email address for submissions.

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

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