

The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

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ad astra *****

So, this happened.

Like many, I was horrified. I really like churches, temples, and cathedrals, and Notre-Dame de Paris is a really nice one, or at least it was until (see photo at right.) I streamed footage of the conflagration and did the usual hoping kind of stuff — that no-one would be hurt, that the walls would not crumble, that enough would survive so that this beautiful architectural treasure could be reborn. It dawned on me that realistically, even in the best case, such would probably not occur during what remains of my time on Earth.

And then this happened: a company known as Ubisoft reminded us that they had gone to a great deal of trouble to create a detailed, accurate-to-the-brick, 3-D computer model of this amazing building, inside and out, which they offered to whomever it might benefit in learning more about it, including you and me, the general public. The model was created for use in their video game *Assassin's Creed: Unity*, and for a limited time the PC version of "AC:U" was free.

Well, just like anybody else, I am down with "free." And I appreciate 3-D computer models probably more than the average guy. I also play computer games once in a while. It had been a while, and I was not really planning to indulge in that pastime at this juncture, but before you know it I found myself downloading the "free gimme," and then installing it, and then playing it some. And before too long I was controlling Assassin Guy as he ran around in this fictionalized electronic version of 1789 Paris, and touring the cathedral that I would probably never visit in real life.

Astronomy in Video-Game Revolutionary France

Apparently Notre Dame was a mess back then. We find a cannon in the front foyer, heaps of furniture piled up and trash all over the place, and ruffraff making out and doing opium deals and victimizing the weak all through its halls and passages. There is a small herd of goats to be found, penned in one of the niches in the back of the sanctuary. (See the next page for some snapshots.) Still, the impressiveness and grandeur of the building comes



Photo by [LeLaisserPasserA38](#) / CC BY-SA 4.0



A montage of Assassin Guy's tour of Notre-Dame de Paris

through. I quickly felt that I had gotten my money's worth out of the deal. Thank you, Ubisoft!

They also did a great job of creating the illusion of being in a city teeming with millions. I have never seen so many "NPCs" in my life! They shouldn't have made so many copies of the poor guy haplessly lugging around the big iron cross, though. He sticks out a bit too much and it breaks the illusion to keep running into him. Like, it must be Big Iron Cross Day at Carrefour.

Continued progress in the game shortly requires a visit to Sainte-Chapelle. I have heard that Sainte-Chapelle is beautiful in real life, and it is beautiful in *AC:U* as well. Assassin Guy is required to do a First Reading there in order to become a full regular member in LFAAS (Liberated France Accredited Assassins Society.)



Stained glass is an awesome technology. It makes for breathtaking interior spaces, in computerized virtual reality and in the actual, material world as well.

Another set of must-visit places are the locations of the Eagle Points, where you climb up to the top of some tower or spire and survey the landscape, an action which fills in the blanks in the game map that represents your knowledge of the neighborhood. There is a certain logic to this, which contrasts with the literally fantastic

Spider-Man-like ability of Assassin Guy to climb up on things. He has a certain kitten-like quality; sometimes it is difficult to convince him to go back down. Unless there's a hay wagon parked nearby. The half-somersault swan dive from hundreds of feet, landing unharmed on his back in the hay, is breathtaking. And ridiculous. (And there are a ton of hay wagons around, but hardly any horses!)

Photos at left are from the grounds of one of these Eagle Points. I discerned that it was an institution of higher learning, and then figured out that it was La Sorbonne, Paris's most venerated university, then and now. So what do we have here? It appears to be a Galilean refractor, with some sort of plumbing elbow used as a diagonal, on a German Equatorial Mount. In our world the GEM would not have been invented by this time. Maybe they came up with the mechanical design a few decades before they figured out how to align it with the Pole. This one is pointing roughly to the Southwest, and the object under study, in the middle of a clear blue sky, is conveniently aligned with the built-in wedge angle, so the rotational axes of the mount don't need to be exercised.

Whatever the guy is looking at, he is making sketches and taking lots of notes. The game would not let me zoom in enough to read the notebook pages.

At the opposite end of the courtyard, there is a twin, aligned square to the building's edges (which the first one is not) but pointed in roughly the opposite direction. Perhaps the table next to it has the lens-cleaning supplies.

Then we have the rig that dominates the scene in the center of the courtyard. There are some images on the next page. I just don't know. It looks expensive for that day and age, but I suppose it was at least as easy to get funding for ridiculous scientific endeavors out of Louis XVI as it is the National Science Foundation.

The rendering of the two large optical elements in the



front and the middle have been tweaked by the game's engineers to make it look like they are doing something to the light passing through them, though whatever the something is, it does not appear to involve actual refraction from what I can tell. Then there is the shiny salad bowl element at the back. It clearly appears to be reflecting something, but the buildings in the reflection do not appear to be the buildings surrounding the device. Maybe it is some kind of mystical portal to a parallel universe, disguised to look something like a telescope to the uninitiated.

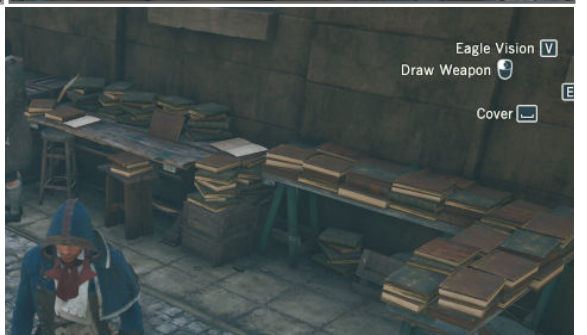
The Natural Philosophers who are attending to it, whatever it is, don't seem to bother with Assassin Guy as he clambers all over the delicate instrument. (I mean, some of us do that with the 40", but it's under construction! We are planning to get out of that habit before we put the glass in it.) I think they are scared witless of Assassin Guy and they are pretending not to notice him, hoping that he will return the favor. Assassin Guy is pretty scary. When he pulls that sword out of its scabbard, plenty of blood is usually flowing quickly thereafter, and not very much of it is his own.

Then there is this ridiculous frame of clothesline rope enclosing the whole experiment. It has to be related, although how I cannot imagine. I guess some of the operations we have conducted in the



Schlegel Observatory must have looked just as mystifying to the random hikers who stopped in.

There is even a 1789-La-Sorbonne version of our Librarian, David Raker, selling off some less-desirable books to make room on the shelves for the latest releases.



There is an observatory dome, too! High up on one side of the building, though not as high as the main dome where the Eagle Point is located. The shutter design is not what we are used to, but whether it is historical or merely the product of some lazy game designer's imagination, I don't know. I had to have Assassin Guy hang from that odd ridge-like feature by his fingernails in order to get this view, but Assassin Guy could do that all day, while shaving and brushing his teeth at the same time. Assassin Guy is awesome. He never seems to need to eat, sleep, or go to the privy (although he can hide in one in order to surprise his next victim.)



I do like this view, with Saint-Chapelle and Notre-Dame in the background. According to the game map, there is some kind of "Helix Rift" time portal behind Sainte-Chapelle, up just off the south end of Rue de Harlay, that will take Assassin Guy to Belle Époque Paris. There I have reason to believe that I will find the Statue of Liberty and the Eiffel Tower to explore. (In the real world, Miss Liberty was in New York by the time Mr. Eiffel started constructing his namesake, but poetic license is taken to give the game world more pizzazz.) At some point I will need to investigate it, to explore both of those, hopefully to see Notre-Dame in better trim, and also to see what's going on at La Sorbonne. If there is anything of astronomical interest, I will let you know.

Ad Astra!

— *Rich Hogg*

LVAAS General Meeting - Open to the Public

Sunday, June 9, 7:00 p.m.

South Mountain Headquarters

620B East Rock Road -- Allentown, PA 18103

"The Astronomy of Beer"



Ron Kunkel, LVAAS Life Member

Come hear why this popular beverage truly is "out of this world!" Ron reprises the popular talk he recently presented at the DaVinci Science Center to rave reviews.

Ron has a degree in physics and retired from Bell Labs where he worked for 33+ years as a materials engineer in their photonics business unit. He specialized in crystal growth of detectors and laser sources for fiber optic communication, retiring as a global product engineer. For 32 years he was an armchair astronomer, his favorite topic being galactic evolution. He bought his first telescope at age 48. He has dabbled a bit in astrophotography but is primarily a visual observer, and globular star clusters are his favorite viewing objects. For LVAAS, he has served in all four of its elected offices. He currently runs the scouts camping program at their Pulpit Rock site where he also maintains the grounds and helps with telescope maintenance.

Minutes for the LVAAS General Meeting - May 5, 2019

The May 2019 LVAAS General Meeting was held on May 5th at the LVAAS facility on South Mountain in Lower Saucon Twp. There were about 50 people in attendance. The meeting was opened by Rich Hogg, Director, at 7:05 p.m. The speaker was Dr. Ed Guinan, professor of astronomy and astrophysics at Villanova University. His talk was titled "Preparing for Martian Colonization - Growing Vegetables in Simulated Martian Soil." Dr. Guinan's research interests include Binary Star Systems, Pulsating Stars, Black Holes, Evolution of the Sun and Solar-like Stars, Pulsating Red Stars, APT (Automatic Photoelectric Telescope) Programs, Apsidal Motion Studies, and Searching for Planets. This project started because he had an interest in gardening, the work was sponsored by NASA, and VU gave them the use of a portion of their greenhouse. The venture was dubbed "Project Red Thumb."

Any plans to send humans to Mars to establish a permanent human presence will require them to grow some, if not all, of their food on Mars. SpaceX is shooting for 2026, about 10 years ahead of NASA's timetable. They plan to have cargo ships land in 2025, and have 400+ people there by 2040. Due to radiation, they would like to minimize any individual's number of trips back and forth and habitation would probably have to be underground (for shielding). They investigated the best plants to grow in iron-rich soil with reduced light (43% of Earth's.) It is thought it would probably be necessary to augment the light. Temperatures average -125° to 25° C, pressure ~6 mb (equivalent to Earth at 20,000 ft). The atmosphere is 96% CO₂, 2% N₂. There is no ozone to protect from UV rays.

Although Mars lost a lot of its water long ago, most may still be present, frozen in the permafrost. Most of its oxygen is in its rocks and soil (hence the red color.) Plants would need to be grown in sealed, heated, and sheltered greenhouses. The composition of the soil has been known since 2007, so it is possible to prepare "Simulated Mars Regolith." Mars also has perchlorates in the soil, which are toxic to plants and people, but which are not included in the simulant, but they would have to be removed to grow plants on Mars. High school and grade school groups in many countries have tried to grow a variety of plants in the regolith, which is commercially available from Mars Gardens. At Villanova, criteria were that the plants had to be edible (no flowers, etc.) The regolith becomes brick-like when it gets wet, so can be modified by adding something like vermiculite.

Greens seemed to do well, such as lettuce and spinach. Carrots and beets didn't fare as well. Dandelions also did well, and most of the plant can be eaten. Although fertilizers would help, it is not feasible to bring them, so they could use waste and feces, but would require some processing, and the best processors turned out to be earthworms, which aerate the soil and enrich it with their droppings, and are also edible - a source of protein and vitamins. One student wanted to try growing marijuana, but that was too impractical, so they opted for barley and hops to make into beer. This was also impractical, since so little of the hops plant is used - just the flowers - and the plants actually had to be removed because they grew up into the greenhouse like a vine. In addition to the lack of oxygen, the humidity on Mars is about 0.1%, so water would have to be added, after being obtained from the permafrost. An additional complication is that the high iron content of the soil might be accumulated in plants like spinach, which may be toxic. Plants grown in regolith are currently being sent out for analysis. One source of energy available on Mars is geothermal. There is only 1/5 of that available on Earth, but it is harvestable. Many challenges! The Q&A ended at about 8:19 p.m., and was followed by a break.

Rich called the meeting back to order at 8:32 p.m., and made an announcement requesting help with the Red Shift and for someone to volunteer for the post of **Member Services Director**.

Membership Report (Gwyn Fowler):

Second Readings: Rose Bachik and Francis Kuklis. They are now a full member of LVAAS, entitled, among other things, to obtain keys to the facilities and be trained on and use club equipment.

First Reading: Abigayle Ward - she is interested in all aspects of astronomy.

The next **General Meeting** will be June 9, 7:00 p.m., at South Mountain. **Ron Kunkel** will be the speaker.

The next **Star Party** is scheduled for Saturday, June 8.

The beer tasting night at the **DaVinci Science Center** went well. We had a good number of volunteers and it was very enjoyable.

Megameet has been rescheduled to the last weekend in June.

Treasurer's Report (Scott Fowler):

Income for the year: hoping for \$17,500. Have \$6900 in membership dues, for the year. Public support so far this year has been approximately \$1000. **Expenses** are at \$6200, with a big part of that being for heating oil and \$3000 for all utilities. We also received \$290 in donations for the Holiday Party.

Preston Smith, a member, has volunteered to help us generate a strategic plan for the club. He gave a brief summary of what he is trying to do: How do we plan for 3 yrs? 5 yrs? etc. What is our vision? Our mission? What is our current environment and how do we fit into it? What are our strengths? Weaknesses? Who are our customers? Do our resources match our customers' needs? The process will start at the next board meeting with a timeline and plan to move forward.

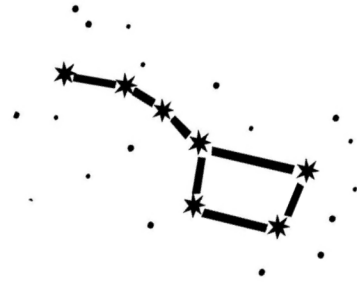
Rich reminded everyone that the **board meetings** are open to all members and that they should feel free to attend.

Library (Dave Raker) - There are still books for sale in the Red Shift, and in the South Mountain Library, in cardboard boxes, prices as marked. We also have some new books and videos available for loan.

Rich pointed out our newest **donation** - a Meade LX200R 12" SCT. It has a declination drive problem, which we are working to repair. It came with a Daystar solar filter. A 6" goto Newtonian was also donated separately. We now have a glut of telescopes and we are brainstorming ways to improve and increase their usage. We also have a 10" Meade SCT that is technically (for a properly trained member) available as a rental.

The meeting adjourned at 8:51 p.m.

Submitted by Earl Pursell, Secretary



UACNJ provides free public programs at our Observatory in Jenny Jump State Forest from April through October on Saturday evenings. An astronomy presentation begins at 8 PM in the lecture hall regardless of the weather and is followed by stargazing on the observatory's telescopes until 10:30 PM, weather permitting.

UACNJ Weekly Talks for 2019

- | | | |
|----------|--|----------------------|
| April 6 | - What's Up in the April Sky? | - Lonny Buinis |
| April 13 | - Size Scales of the Solar System and Beyond | - Jason Kendall |
| April 20 | - Journey to the Stars | - Karl Hricko |
| April 27 | - What Happened to Pluto? | - Ron Kunkel |
| May 4 | - What's Up in the May Sky? | - Lonny Buinis |
| May 11 | - Making Isaac Newton Proud: Modern Newtonian Telescopes | - Rob Teeter |
| May 18 | - Astronomy for Beginners | - Ken Taylor |
| May 25 | - Night Vision and Astronomy | - Earl Pursell |
| June 1 | - What's Up in the June Sky? | - Lonny Buinis |
| June 8 | - How the Stars Got Their Names | - Bill Murray |
| June 15 | - The Life and Death of Stars | - Walt Windish |
| June 22 | - Mars Through the Dust Storm | - Clif Ashcraft |
| June 29 | - Eclipses, Occultations, and Transits | - Gregg Waldron |
| July 6 | - What's Up in the July Sky? | - Lonny Buinis |
| July 13 | - Fly Me to the Moon | - Sean Post |
| July 20 | - New Rides to the Moon | - Dale Skran |
| July 27 | - Let's Go to the Moon | - Karl Hricko |
| Aug 3 | - What's Up in the August Sky? | - Lonny Buinis |
| Aug 10 | - Astronomy for Beginners | - Ken Taylor |
| Aug 17 | - New Horizons Visits Ultima Thule | - Michael Dean Lewis |
| Aug 24 | - You Bought a Telescope, Now What? | - Paul Fischer |
| Aug 31 | - The Milky Way Galaxy - Structure & Evolution | - Ron Kunkel |
| Sept 7 | - What's Up in the September Sky | - Lonny Buinis |
| Sept 14 | - Photographing Night Sky Landscapes | - Stan Honda |
| Sept 21 | - Traveling in Space and Time | - Gary DeLeo |
| Sept 28 | - Northern Lights | - Gregg Waldron |
| Oct 5 | - What's Up in the October Sky? | - Lonny Buinis |
| Oct 12 | - Introduction to Video Astronomy | - Bill Murray |
| Oct 19 | - The Cosmic Distance Ladder | - Jason Kendall |
| Oct 26 | - The Beauty and Power of the Universe | - Walt Windish |



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As our LVAAS Member Services Director, you will enjoy the challenge of operating the Red Shift Gift/Snack Shop at LVAAS Public Star Parties.

The only way to lose is to not play!
Contact director@lvaas.org to sign up!

LVAAS at DaVinci Science Center for "Beer: The Final Frontier"

by Ron and Cindy Kunkel

On Saturday May 4, 2019 the DaVinci Science Center held their fourth "BEER THE FINAL FRONTIER" event from 6:00 p.m. to 10:00 p.m. at their location in Allentown. This adults-only event afforded a sampling of various Weterbacher brews, a trivia contest, and an astronomy lecture in addition to participants being able to tour the extensive exhibits of the center.



This year's event for the first time was co-hosted by LVAAS which provided a telescope display and an astronomy lecture. As originally planned, LVAAS was to provide various telescopes for outdoor viewing of the sky but the weather dictated instead an indoor display of various types of telescopes. LVAAS Director Rich Hogg set up the Society's 10" Meade LX200, a Cassegrain reflector, which to the astonishment of visitors was viewing the flag on the PPL building located about three miles distant. Bill Dahlenburg set up his astro-imaging telescope, a

refractor with camera, laptop, and associated gear. Members Carol and Chris Kiely set up their Dob, a Newtonian reflector to round out the telescope display. The telescope



(Above) Blaine Easterood with son, Matt

(R) Bill Dahlenburg with his telescope and some wires.

display was also manned by members Mike and Paula Clark, Blaine Easterwood, and Ron and Cindy Kunkel.

At 7:00 PM, LVAAS member Ron Kunkel, presented the astronomy lecture, titled The Astronomy of Beer. His first topic was to explain the astronomical significance of a few of the hundreds of astronomy named brews. Then the bulk of his talk explained the astronomical and cosmological origin of the Hydrogen and Oxygen atoms that form the water molecule, a principle ingredient of beer. About 50 people attended the lecture and based on the questions asked at the end of the lecture, the talk was well received.



Some additional LVAAS members attending the event included Frances Kopy, Sandra Repash, and Blaine's son Matt Easterwood, who also works for DaVinci and who assisted in the trivia contest. In total about 150 people attended the well organized event.



(L) Ron speaks to an enthusiastic audience about the astronomical origin of two of the principle ingredients of a favorite beverage.

(Below) Some examples of brews whose names are astronomy-related, provided by Rich and Blair Hogg.

(Bottom) Matt Easterwood runs the trivia contest.

Photos courtesy Cindy Kunkel





From the LVAAS Archives:

A Rebel Physicist and Cosmic Rays

by Sandy Mesics

Physicist Dr. Martin A. Pomerantz (1916-2008) was the featured speaker at the Middle East Region of the Astronomical League (MERAL) banquet. This event was hosted by LVAAS and featured three days of paper sessions, meetings, films, planetarium programs, and tours of Pulpit Rock and South Mountain. The banquet and Pomerantz's talk were held on the evening of Saturday, June 14, 1969 at the Hotel Bethlehem. At the time, Pomerantz was Vice President of the Bartol Research Foundation of the Franklin Institute and Advisor to the National Science Foundation. His topic was "Exploring Space with Cosmic Rays."

According to Wikipedia, Pomerantz was a pioneer in the field of balloon-borne cosmic ray research in the 1940s and 1950s. Because cosmic rays are detected more easily at the South Pole because of less deflection due to magnetic fields, he realized early on the value of Antarctica as an observing platform. In 1964, he commenced his observational efforts there.



Figure 1 Martin A. Pomerantz at the observatory named in his honor. Photo from

<http://www.southpolestation.com/trivia/90s/mapo.html>

Pomerantz earned his B.A. from Syracuse, the M.S. from the University of Pennsylvania, and the PhD from Temple University. In 1971, he published the book "Cosmic Rays" a semi-popular book that described his observations. Somewhat the "rebel," in 1979, Pomerantz and a couple of his colleagues conducted unauthorized observations from the Antarctic by coupling a small telescope with a "sodium vapor resonance cell." As Pomerantz later described it, "We had to find a way to convince people that the South Pole was the place for astronomy. Sometimes you need to circumvent the rules. Our bootleg experiment

enabled us to obtain the clearest pictures of the sun that had ever been obtained from any place on earth. It proved once and for all this was a superb place for astronomy." Their observations greatly extended the knowledge of the sun's vibrational frequency spectrum, and marked the beginning of an extensive astronomy program at the South Pole (Wikipedia).

Pomerantz was awarded the NASA Distinguished Science Achievement Award in 1990, and in 1995 he was honored by the dedication of an observatory bearing his name at the U.S. Amundsen–Scott South Pole Station.

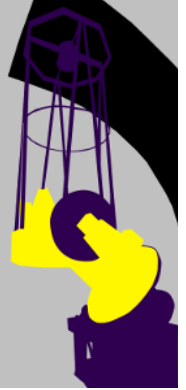
References

The Observer, July 1969

Wikipedia

Schlegel Observatory Report

by Rich Hogg – June 2019



Quite a lot has been going on since my last report, so rather than promise you a blow-by-blow accounting with accurate dates, I am just going to touch the highlights. I know we've had at least three work sessions and I think there might have been four.

Plan change - you may recall that last month, I implied we would re-attach the truss before beginning disassembly of the mirror cell. Well, we decided to try proceeding without re-attaching the truss. The advantage of this is that without the truss, the mirror cell would not be top-heavy, and it would hang stably in the fork mount even without the steel backplate and the concrete mirror stand-in. The disadvantage is that we would lose the utility of the truss as a lever for positioning the cell. At the beginning of the operation, we had the



mirror cell chained up so that the telescope was pointed at the horizon, to simplify working on the truss. The operation to rotate it 90 degrees required a couple of hours of horsing around with a come-along and a temporary lever, but we got it done safely and without incident. The photo at right shows (top to bottom) Ron Kunkel, Claudio Stabile, and Frank Lyter working on this operation.

(Another plan change was prompted by a helpful comment from Bob Mohr after he read last month's report. He pointed out that our idea of using wooden plugs in the truss tubing to prevent them collapsing from the pressure of the set-screws was not a great idea, since moisture would be absorbed by the wood and corrosion would result. Frank has obtained heavy-wall tubing to use instead, which he is machining to create the required plugs.)

Housekeeping - I instigated one mid-week work session to clean up the observatory deck, knowing that we would soon be starting a critical procedure for which room to maneuver would be helpful. I ended up getting quite a bit more help than I expected, so the cleanup was completed in short order. Thanks to Carol Stager, Bob Weiss, Maurice Connor, Terry and Mike Roszhart, Andy Heilman, and Earl Pursell for pitching in! Earl gets special mention for finding the end-brackets for the mirror lifting frame (the "X-frame") which I had started to suspect had been tossed out in an earlier cleanup. I guess Earl decided that if they were anywhere, they must be in one of the most invisible, inaccessible places in the building, so he looked there first and that's where he found them.



D-Day - that placed us in readiness for Disassembly Day, when we would drop the concrete "mirror" and the steel back plate from the bottom of the mirror cell, an operation for which specialized hardware was fabricated and which has been done before, but not for quite a number of years. Nobody who has recently been working on the project has seen it done, though we mostly understood the theory. I'd like to thank Treasurer Scott Fowler and Membership Director Gwyn Fowler for joining the team for this process, since they have witnessed the operation in the past.



To the left, you can see Frank and I lowering the heavy components by carefully releasing pressure from the hydraulic jacks on the lifting cart or "jack stand." Each of the four jacks is controlled independently, and they need to be lowered "in sync" so the assembly is kept mostly level. It turned out to be not too difficult, and we soon had the roughly 1/2-ton assembly lowered onto the cart. Kyle Kramm can be seen tending the engine hoist that Frank brought and rigged up as a safety measure in case the cart failed.

Photo credits: photo of Earl Pursell by Rich Hogg; remaining photos from video shot by Terry and Mike Roszhart.

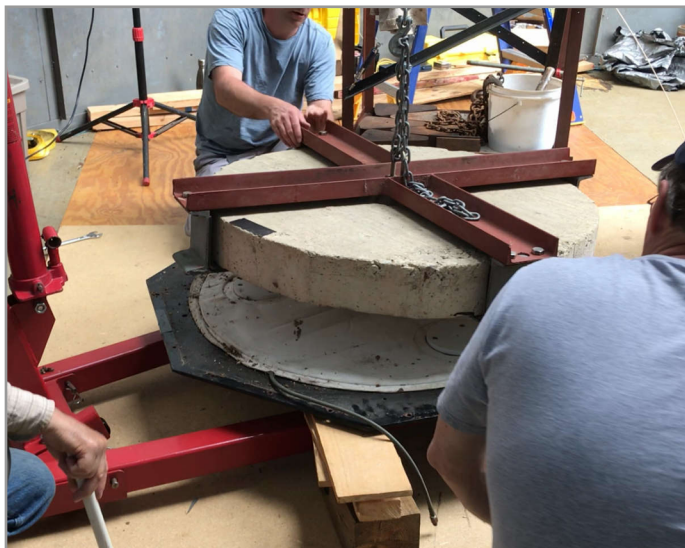
The hoist had to be disconnected in order to roll the cart out from under the rest of the instrument, but then we re-connected it in order to lower the components to the floor. At right, Frank and Kyle are setting up for this.

I think we realized that there was some instability in this setup, but everything seemed steady at first and maybe we became a bit complacent. This turned out to be the most exciting part of the day, as we experienced some sudden and dramatic listing as



shown at left. Scott, on the left side, and Kyle reacted quickly to "right the boat" before any harm was done, and we all breathed a sigh of relief as it gently came to rest on wooden cribbing placed on the floor.

Next, we made good on Earl's discovery of the brackets, and attached the X-frame to the top of the fake mirror as it was intended. We then used the engine hoist to lift the mirror, exposing the airbag for its first inspection in probably about a decade (photos below.)



It appears to be in good shape, though a few of the inevitable critters have obviously crawled in there and died over the years. We are now ready to complete preparation the mirror cell for re-painting, and then we can begin reassembling the instrument. Stay tuned!

from Frank Lyter, Pulpit Rock Observatories Director, via PR Buzz:

Last Sunday afternoon a group of us started the process of removing the concrete mirror. We plan to exercise the removal / installation of the concrete mirror several times to refine the process. The exercise will occur over multiple scheduled events at Pulpit. Assisting in the effort Sunday was Ron

Kunkel, Rich Hogg, Andy Heilman, Terry Roszhart, Mike Roszhart & Claudio Stabile

The current thinking is it would be ideal to practice the removal and installation of the mirror with the trusses removed as they are today. Without the trusses installed we don't have to deal with it being top-heavy when the mirror is not installed.

Initial steps include

- Re-orient the mirror cell from its current position to horizontal with some come-along's and safety chains - This

was completed - see Preparing to Remove Concrete Mirror video below:

- Position the jack stand under the mirror in preparation for lowering the mirror out of the cell - This was completed

- Position engine hoist with chain through the center of the mirror as a safety backup and to allow the mirror to be lowered off of the jack stand - This was completed

- This is where we had to stop because the oil in jacks had leaked out over time. We are testing if simply refilling jacks with oil will work. If not we will likely purchase jacks at Harbor Freight

Next steps include:

- Evaluate whether any modifications to any equipment are required to proceed

- Lower mirror out of the cell via the jack stand

- Lower mirror from the jack stand to the floor via the engine hoist

Video courtesy Terry and Mike Roszhart. More videos are available on page 18. Follow the Pulpit Rock Buzz for updates. - editor





(1.) Rotating the Telescope



(4.) Truss Tube Removal -1



(2.) Preparing Truss Tubes for Removal



(5.) Truss Tube Removal -2



(3.) Truss Removal Process



(6.) Drilling for Revised Truss Tube Geometry

StarWatch

by Gary A. Becker

In Astronomy Lab 106



When the school year ends and grades are finally submitted, I usually sit down with my computer and spend some quality time thinking about the pros and cons of my course during the past semester. I like to do that right away because remembrances dull over the interval of a summer's break. In addition, every semester reflects changes in the order of my presentations because I want my students outside under a dark sky to make observations. The moon, as everyone knows, is not in synchronization with the calendar year. Simply witness how the date of Easter changes, and even more importantly, how all celebrations and requirements for participation vary in the Islamic and Judaic calendars.

I also include some poetry in the "Student Information" section of my book because I agree with Moravian College's Liberal Arts philosophy. I personally feel that astronomy is the "beautiful science," mixing the art of an inspiring skyscape with some of the most cutting-edge inquiry that humankind is attempting. However, it has always been the aesthetics that first drew me into the subject, and like an addict, I really get restless for my fix of dark sky, accented with a vibrant Milky Way, as temperatures warm and observing becomes more pleasant.

In a major way my liberal arts philosophy has been strongly influenced by my wife, Susan, a soul with the love of the English language and a prolific writer who manages to inscribe commentary into numerous journals during the course of a day. Every StarWatch that I have ever written has been tempered by the softness of her pen and made more readable by her eclectic insights. Her writings, however, are very private. I don't go snooping into her journals looking for secrets, but every once-in-a-while she shares her poetry with me. It happened yesterday, when she read a verse about her insights as she sat in my classroom while I was probably copying something upstairs. With her permission granted, I'd like to share her thoughts on that June 2, 2018 afternoon because I believe it provides an understanding of what a nonscience person, surrounded by science, feels when confronted by an unfamiliar situation,

which in her or his mind has the chance for failure. There is a happy ending, and the poem is now included in the newest evolution of my **Astronomy Survival Notebook**.

In Astronomy Lab 106


When I sit in the all scientific, Science Lab, 106,
with long tables and awkward chairs,
When I smell that slightly stringent
smell and hear the throaty thrums,
of air conditioners and circulatory systems,
I think of my past college years.
How frightened I was
to think how an English major
fit in with this Ice Station Zebra surroundings.
Now 48 years later, the sting of GPAs,
the flush of feeling stupid,
the intricate understanding swept away,
I am left with a profound and grateful
spirit that I had the experience,
that I survived it, and that I
now wish it wasn't all over.

© Gary A. Becker – beckerg@moravian.edu or garyabecker@gmail.com
Moravian College Astronomy - astronomy.org

Now on Facebook at facebook.com/StarWatchAstro/

Night Sky Notebook for June

by
Pete Detterline



The cover of the 'Night Sky Notebook for June' by Pete Detterline features a photograph of a dawn sky. Venus is labeled as a bright white dot, and the Moon is shown as a dark, partially illuminated sphere. The background is a gradient of orange and yellow from the rising sun, with dark silhouettes of mountains at the bottom. A red YouTube play button icon is centered in the middle of the page.

Night Sky Notebook

Pete Detterline

Venus and the Moon make the last of their morning debut as they shine brightly together in the northeastern sky before sunrise. This will be the last time to see them in the morning sky for a while as Venus heads toward the Sun and then into the western sky in the fall.

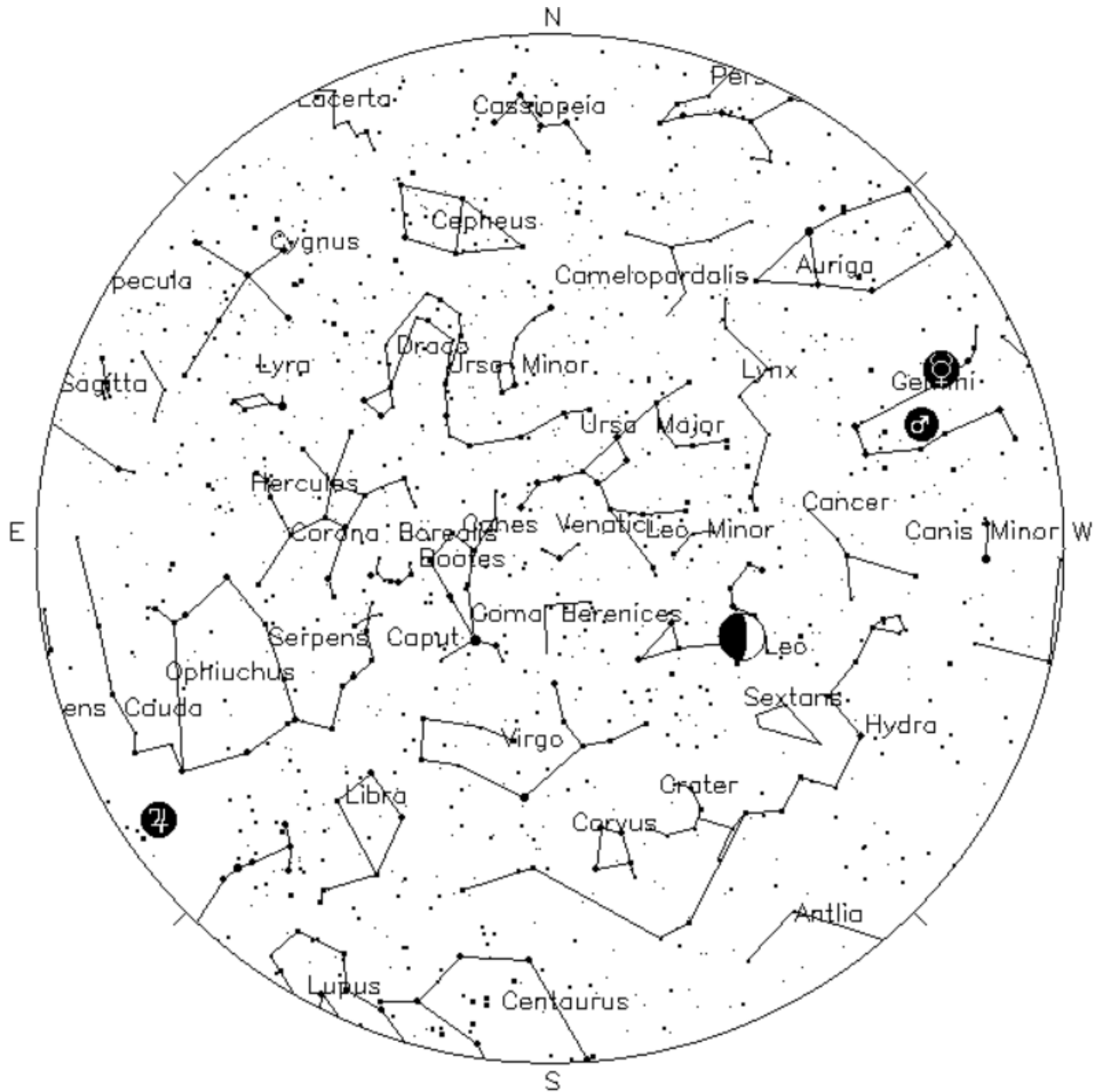
The pair will be low in the bright dawn, so a good low horizon is essential and binoculars will help!

Can you see Earthshine on the Moon? It's the nighttime side of our closest neighbor lit by the brightness of the Earth.

Venus •

June 1 5 AM NE

Sky above 40°33'58"N 75°26'5"W Sunday June 9 2019 1:00:00 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

Lempel-Zim compression based on "compress"

Modified by Marcel Wijkstra

Copyright © 1989 by Jef Poskanzer.

Customize Your Sky ->

at : <http://www.fourmilab.ch/yoursky/>

JUNE 2019

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--|---|--|-----------|-----------|--|--|
| | | | | | | <u>01</u> Cherry Springs Star Party |
| <u>02</u> Cherry Springs Star Party | <u>03</u> New Moon | <u>04</u> | <u>05</u> | <u>06</u> | <u>07</u> | <u>08</u> Star Party |
| | | | | | | |
| <u>09</u> General Meeting - 7:00 PM | <u>10</u> First Quarter Moon | <u>11</u> | <u>12</u> | <u>13</u> | <u>14</u> Scouts at Pulpit Rock | <u>15</u> Scouts at Pulpit Rock |
| | | | | | | |
| <u>16</u> Fathers Day Scouts at Pulpit Rock | <u>17</u> Full Moon | <u>18</u> | <u>19</u> | <u>20</u> | <u>21</u> | <u>22</u> |
| | | | | | | |
| <u>23</u> Deadline for submissions to the Observer | <u>24</u> | <u>25</u> Last Quarter Moon | <u>26</u> | <u>27</u> | <u>28</u> Mega Meet | <u>29</u> Mega Meet |
| | | | | | | |
| <u>30</u> Mega Meet LVAAS Board of Governors Meeting | | | | | | |

JULY 2019

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--|-----------|---|--|---|--|---|
| | <u>01</u> | <u>02</u> New Moon | <u>03</u> | <u>04</u> Independence Day | <u>05</u> | <u>06</u> Star Party |
| | | | | | | |
| <u>07</u> | <u>08</u> | <u>09</u> First Quarter Moon | <u>10</u> | <u>11</u> | <u>12</u> | <u>13</u> General Meeting/Picnic - 5:00 PM |
| | | | | | | |
| <u>14</u> General Meeting (rain date) - 5:00 PM | <u>15</u> | <u>16</u> Full Moon | <u>17</u> | <u>18</u> | <u>19</u> Scouts at Pulpit Rock | <u>20</u> Scouts at Pulpit Rock |
| | | | | | | |
| <u>21</u> Scouts at Pulpit Rock Deadline for submissions to the Observer | <u>22</u> | <u>23</u> | <u>24</u> Last Quarter Moon | <u>25</u> | <u>26</u> | <u>27</u> |
| | | | | | | |
| <u>28</u> LVAAS Board of Governors Meeting | <u>29</u> | <u>30</u> | <u>31</u> New Moon | | | |

2019 LVAAS Event Calendar

| 2019 LVAAS Event Calendar | | | | | | | | | | | | |
|---------------------------|----------------------|------------------|---------------|------------------------------|-----------------|-----------------|-----------------------|---------------------------|-------------------|-------|------|------|
| | <u>Sundays</u> | | | | <u>Thursday</u> | <u>Saturday</u> | <u>Mondays</u> | <u>Multi-Day Weekends</u> | <u>Moon Phase</u> | | | |
| | General Meeting time | Date/location | Board meeting | Observer submission deadline | Astro Imaging | Star Parties | Scouts at S. Mountain | Scouts at Pulpit R. | New | First | Full | Last |
| January | 2:00 PM | 13 Muhlenberg | 27 | 20 | 24 | no mtg | | no camping | 5 | 14 | 21 | 27 |
| February | 2:00 PM | 10 Muhlenberg | 24 | 17 | 21 | no mtg | | no camping | 4 | 12 | 19 | 26 |
| March | 2:00 PM | 10 Muhlenberg | 31 | 24 | 21 | 16 | | 22-23-24 | 6 | 14 | 20 | 28 |
| April | 7:00 PM | 14 S.M. | 28 | 21 | 18 | 13 | | no camping | 5 | 12 | 19 | 26 |
| May | 7:00 PM | 5 S.M. | 19 | 19 | 16 | 11 | | 17-18-19 | 4 | 11 | 18 | 26 |
| June | 7:00 PM | 9 S.M. | 30 | 23 | no mtg | 8 | | 14-15-16 | 3 | 10 | 17 | 25 |
| July | 5:00 PM | 13 S.M. | 28 | 21 | no mtg | 6 | | 19-20-21 | 2 31 | 9 | 16 | 24 |
| August | 7:00 PM | 10 Pulpit | 25 | 18 | no mtg | 3 | | 16-17-18 | 30 | 7 | 15 | 23 |
| September | 7:00 PM | 8 S.M. | 29 | 22 | 12 | 7 | | 13-14-15 | 28 | 5 | 14 | 21 |
| October | 7:00 PM | 13 S.M. | 27 | 20 | 17 | 5 | | 11-12-13 | 27 | 5 | 13 | 21 |
| November | 7:00 PM | 10 S.M. | 24 | 17 | 14 | 2 | | no camping | 26 | 4 | 12 | 19 |
| December | 2:00 PM | 15 | 29 | 22 | 12 | no mtg | | no camping | 26 | 4 | 12 | 18 |

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

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

April 6 – 7
 May 30-June 2
 Aug 1 – 4
 Sept 27 – 29
 see website

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:

<https://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.

The Observer is the official monthly publication of the Lehigh Valley Amateur Astronomical Society, Inc. (LVAAS), 620-B East Rock Road, Allentown, PA, 18103, and as of June 2016 is available for public viewing. Society members who would like to submit articles or images for publication should kindly do so by emailing The Observer editor, Frances Kopy at editorlvaas@gmail.com. Articles submitted prior to the Sunday before the monthly meeting of the board of governors (please see calendar on website) will appear in the upcoming month's issue. PDF format is preferred. Early submissions are greatly appreciated. Articles may be edited for publication. Comments and suggestions are welcome.

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