The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society https://lvaas.org/ https://www.facebook.com/lvaas.astro August 2021





Last month we completed the changes to the By-Laws. This means that the August 7th General Meeting at Pulpit Rock will also include a Business Meeting for the membership to vote on the changes to the By-Laws. The changes can be viewed at

https://lvaas.org/page.php?page=2021_bylaws_revisions

I am glad to report that Preston Smith has volunteered to take the position of Member Services Director. The Member Services Committee is responsible for operating the Society's "Red Shift" store and providing commissary services to attendees of Society functions. The Member Services Committee submits a monthly report to the Board of Governors, which includes a financial reconciliation, an activity report, and any other pertinent details. Additionally, we have created a new Special Committee on Volunteerism that Preston has also volunteered to manage. In this position Preston will coordinate members wishing to volunteer their time to support LVAAS. Thank you, Preston, for supporting LVAAS!! The position of Star Party Coordinator still remains open. If anyone is interested in this position, please contact me at director@lvaas.org

Speaking of volunteering you should know that the election of officers is coming up in October. Under LVAAS By-Laws all four officer positions of LVAAS are open for election every year. Nominations for all positions are due by the September General Meeting. If you are interested in becoming an LVAAS officer, please contact Bill Dahlenburg at sm_maintenance@lvaas.org to volunteer. Volunteers are the lifeblood of our organization, and we struggle every year to find people willing to dedicate their time to help run the club. Below is a summary of each position and their responsibilities:

- ✓ Director shall preside at all General, Business, and Board Meetings. The Director shall have sole authority to sign all contracts on behalf of the Society.
- ✓ Assistant Director shall preside in the absence of, or inability of, the Director to preside, or at the pleasure of the Director. The Assistant Director will function as the Society's records manager and maintain the official records of the Society.
- Secretary will keep the minutes of all General, Business, and Board Meetings, conduct the correspondence of the Society, and provide copies of official correspondence to the Society archives. The Secretary shall annually, and in a timely manner, update and post the Society's emergency contact information. The Secretary also shall distribute the emergency contact information to pertinent law enforcement and public safety agencies.
- Treasurer will have charge of all monies of the Society and will report thereon at each General Meeting. The Treasurer will keep an accurate record of all financial transactions of the Society in a permanent file. The Treasurer will receive and receipt all dues and admittance fees from members, will pay bills justly accrued by the Society, and will maintain the financial records of the Society in good order for an annual audit. The Treasurer will provide a complete record of all financial matters including a detailed year-end financial report to the Society archives.

There have been no changes to the state of Pennsylvania pandemic restrictions, so the BOG has approved the additional activities for LVAAS Members Only:

- ✓ General Meeting at Pulpit Rock August 7th
- ✓ Star Party at South Mountain August 14th
- ✓ Additional dates for Star Party and Astro-Imaging meetings will be added to the LVAAS calendar. Please check the website for future dates.

Ad Astra!

In Memoriam: Bob Bukovsky

LVAAS member Bob Bukovsky of Reading passed away July 7, 2021, at the age of 78. He was a graduate of Central Catholic High School and Penn State University, Berks where he earned an associate degree in electrical engineering. Bob served as a Captain in the U.S. Army in Germany and during the Vietnam Era. He was employed as an executive by the County of Berks working with several local, state and federal programs.

Bob was an active LVAAS member. He served as Secretary from 1999-2000, Assistant Director in 2001, and two stints as Director, 2002-2003 and 2007-2008. In addition to his interest in astronomy, Bob enjoyed history, books, bowling, and old radios.



1. L to R: Rick Yandrick, Scott Fowler, Bob Bukovsky, and Vince Lanzetta. Feb. 2003.

Those of us who knew Bob appreciated his dry wit and his wide-ranging knowledge of arcane subjects. Bill Dahlenburg recalled, "What I remember most were the stories. He was stationed mostly in Germany during his time in the service and was able to travel much of Europe. We'd hear stories of his travels during our camping trips at Cherry Springs. As an avid history buff, he could recount stories and details not generally found in the history books but acquired from his visits." Rich Hogg remembered that when he became Director, Bob gave him encouragement.

Bob is survived by his wife Sylvia and his brother, Dennis, as well as his nephew Michael, and two nieces, Melissa Bilski and Erica Rappold. He was predeceased by his sister, Judy Bilski.

Minutes from the LVAAS General Meeting – July 10, 2021

The July 2021 LVAAS Summer Picnic and General Meeting were held both outdoors at South Mountain as well as utilizing an on-line service.

Approximately 55 people were in attendance. 40 People were at South Mountain and the rest joined via Zoom.

The LVAAS Summer Picnic started at 5:00 PM and the General Meeting started at 8:30 PM.

Treasurer's update and membership were discussed prior to introducing the guest speaker.

Treasurers Report: Gwyn Fowler

• There was no official Treasurers Report. Gwyn noted that all bills are being paid and that if there are any specific needs or questions to please reach out to her.

Membership: Gwyn Fowler

- 2nd readings
 - Charles Davies
 - Sasha Davies
 - Peter Miller
- 1st readings
 - Emily Alayon
 - o John Bilecki
 - o Jason Frey
 - Julia McMahon
 - o Anna Palas

Assistant Director Rich Hogg started the presentation portion of the meeting at 8:45 PM.

The General Meeting's presentation was Speckle Interferometry of Double Stars by Clif Ashcraft, PhD. Sandy Mesics introduced the speaker.

Speckle interferometry is geared for the serious observer who wants to work with the professionals in the area of double star observations and publish their observations. Some math is involved but only in discussing what the software does, not what the user actually needs to get into. The work Clif did was accomplished with his 11 SCT and the same little video camera he uses for planetary imaging. Most serious amateurs already have the equipment they need.

According to Clif, he became an astronomer on August 26, 1942 when his mom let him stay up past 11 pm to watch a total lunar eclipse. Clif went to High School in Loveland Ohio, got his BS in Chemistry from the University of Cincinnati and earned his PhD in Organic Chemistry from the University of California at Berkeley. Clif went to work at Union Carbide, where for 40 years he did work on polymer synthesis, advanced rocket propellants, coupling agents for mineral filled thermoplastics, voltage stabilized polyethylene for buried power cables, and cycloaliphatic epoxides. After his retirement in 2003, Clif became a full-time amateur astronomer and amateur telescope maker.

Clif's 7.25" f/14 Schupmann Medial is his favorite telescope, but he also has a C11, C14, and a 12.5" Newtonian. His work has concentrated on Lunar and Planetary Imaging and the measurement of double stars for which he has several papers in the Journal of Double Star Observations. Recently Clif learned to use the technique of live stacking of deep sky objects using the tool in SmartCap. This allows one to obtain moderately long exposures without guiding.

General Comments:

- The LVAAS bylaws revisions are finished. They were unanimously approved by the Board and will go to the membership for approval at the next General Meeting in August. Members please take some time to review the bylaws prior to the vote.
- Frank Lyter will be scheduling a Zoom meeting regarding Stellarium. Stellarium is a free, open source application that installs on Windows or Linux-based computers and is very easy to use. We have a Raspberry PI computer that we have been testing at the last several meet-ups but it won't be permanently installed for a couple of weeks. Feel free to install Stellarium on your own laptop and connect to the telescope for navigating the night sky.
- Gwyn Fowler wanted to thank all of volunteers who helped with tonight's Summer Picnic and General Meeting including, but not limited to, Bill Dahlenburg, Brian Becklin, Scott Fowler, Kyle Kramm, and Earl Pursell.
- On a sad note, Bob Bukovsky passed away. He had been in hospice the last few weeks. Bob was a prior Director among many other positions within LVAAS.

Next General Meeting and Star Party:

- The next General Meeting will be on August 7th and will be held both outdoors at Pulpit Rock as well as utilizing an on-line service. Frank Lyter will discuss the improvements to the 12-inch Meade scope at Pulpit Rock. The rain date will be Sunday, August 8th.
- The next Star Party will be on July 17th at South Mountain. The Star Party Coordinator position is currently vacant, any volunteers? Note: you must be a member of LVAAS to volunteer for this position.
- The August Star Party will be on August 14th at South Mountain.
- Note: These events will be held for LVAAS Members only. Please check the website to verify start dates and times.

The July General Meeting was recorded ands is available on YouTube.

https://youtu.be/zScDcHy3uRI

The meeting was adjourned at approximately 9:40 PM.

Submitted by Dennis Decker, Secretary

LVAAS General Meeting: Pulpit Rock Astronomical Park *Saturday, August 7, 7:00 p.m. *Raindate: Sunday, August 8, 7:00 p.m.; please check website for updates

*Raindate: Sunday, August 8, 7:00 p.m.; please check website for updates <u>In-person meeting only</u>; business meeting to be included for membership vote on bylaw modifications.

Using Stellarium to Control the LVAAS's Meade Telescopes

presented by Frank Lyter

Director of Observatories, LVAAS Pulpit Rock Astronomical Park



Members, please join us for an evening at Pulpit Rock to learn how to use the Stellarium application to control LVAAS's Meade telescopes. The event will be demonstration-focused, showing members how to use the Stellarium application to easily control the telescope to navigate the night sky. The society is setting up dedicated computers to control the telescopes and members are also welcome to utilize their own laptops to control the telescopes. Stellarium is a free, easy-to-use, open-source astronomy application that runs on Windows or Linux based computers. Members are welcome to bring their own laptops with Stellarium pre-installed to test the connectivity with the 12 inch LX200 Meade telescope located at Pulpit Rock Astronomical Park

You're Invited to A Planet Walk!

LVAAS members are invited to join Ray Harris for a 25th Anniversary guided tour of the Planet Walk in Allentown on **Saturday, September 25th at 1:30 p.m. with a rain date of Sunday, September 26th at 1:30 p.m.**

The Rev. Ernest F. Andrews Memorial Planet Walk is a scale model of the Solar System stretching 3,676 feet along the Bridle Path in Allentown's Little Lehigh Parkway. The Planet Walk is designed to a scale of one foot equaling one million miles. At this scale, the Sun is about 10 inches wide, Jupiter is about one inch wide, and Pluto is a tiny period at the end of this sentence. While the planets are small, their actual average distance from the Sun at this scale is quite large. The Earth is 93 feet from the Sun (93 million miles) and Pluto is nearly three-quarters of a mile away! At this scale, to reach the nearest star, you would have to travel to Hawaii.

The LVAAS erected the Planet Walk in December of 1996 as a memorial to the late Rev. Dr. Ernest F. Andrews. Ernie Andrews was a member of the Society for nearly 20 years. His contributions to the Society were many, but his love of the heavens and the warmth he showed to all members, new and old, were his legacy. The Society has named one of its observatories at Pulpit Rock for Ernie Andrews, and the wonderful poem he wrote for the dedication of the Spacek Observatory (also at Pulpit Rock) is proudly displayed for all who pass by to read.

The Planet Walk was erected with funds donated to the Society by his friends and fellow LVAAS members. The LVAAS would like to acknowledge the efforts of Ray Harris (who promoted the plan to build the Planet Walk, came up with the basic design, and arranged for the assistance of the Allentown Parks), Ernie's daughter, Priscilla Andrews (another LVAAS member who wrote much of the text for the Planet Walk), and the Allentown Parks Supervisor (who enthusiastically embraced the idea and approved the use of the Little Lehigh Parkway as well as providing the posts, the assembly of the signs, and the placement of the posts along the Bridle Path).

Priscilla recently commented, "I'm so happy the 'Walk' is still alive and kicking, thanks mostly to the dedication of the great Ray Harris. As I live in Reading now, I would rarely have the thought of visiting the Planet Walk were it not for this welcome invitation. Unfortunately, I seem to be following my Dad's proclivity of unsteadiness on my feet, so I won't be attending. My brother Earl and his wife, Chris, have taken up the gauntlet by helping Ray and Barb with recent repairs as well as checking in on the walk through the years. Thanks to everyone! I'm sure my Dad would be holding back the tears to see how he has inspired the camaraderie of such wonderful people."

The Planet Walk is about 0.7 miles from start to finish. It's about a 1.6-mile round trip from the parking lot on an unpaved path (marked Little Lehigh Parkway Path on the image below) so folks should be prepared for the walk. You can set your map app to 2050 Park Drive, Allentown, PA 18103. We suggest you enter from Jefferson St., and **not** the back way in from 24th St.



We will meet in the parking lot of the Little Lehigh Parkway. To get there, enter the Little Lehigh Parkway from 15th Street in South Allentown (Also called Jefferson St.) About one mile into the parkway, you will reach a steel bridge with a white house to the left and a parking lot to the right. Park in the lot and walk toward the water where you will see a sign pointing along the Bridle Path and taking you under the steel bridge. Here you will find the beginning of the Planet Walk with the inner Solar System including the Sun, Mercury, Venus, Earth and Mars.

Here is a link from the LVAAS website: https://lvaas.org/page.php?page=PlanetWalk

Contributed by Sandy Mesics

Via Earl Pursell, UACNJ Liason: Presentations through October 2021

UACNJ provides FREE public programs at our Observatory in Jenny Jump State Forest from April through October on Saturday evenings. For the safety of the public and our volunteers, we will be operating the observatory much as we did last year: the entire event will be held outdoors with masks and social distancing required. Weather permitting, an astronomy presentation begins at 8 p.m. As you will be outdoors, please bring a chair or blanket to sit on and be prepared for cool weather. The presentation is followed by some stargazing and we will have screens set up to show live video from the observatory's telescopes until 10:30 p.m. These public programs are free but donations are appreciated. Note admission is limited and by reservation ONLY. For more information and free registration see our website: http://www.uacnj.org/index.php. Reservations for the following week's program go on sale Sunday at 12 noon. Please join us or watch our presentations online by subscribing: youtube.com/UACNJ

Via NASA: The Hubble Ultra Deep Field in Light and Sound Have some musical fun! Pointing at a galaxy will produce a note that will indicate its approximate redshift. Interactive map here: https://apod.nasa.gov/apod/ap210802.html



Via NASA: Hubble's back! Why not join in the celebration by checking out the neat activities at this link: https://www.nasa.gov/content/hubble-inspires-online-activities



Benefit from giving to LVAAS through your IRA!

If you are 70 1/2 or older, you can make a charitable gift directly from your IRA to LVAAS without paying income tax on the withdrawal. State laws about Qualified Charitable Deductions (QCDs) and how QCDs are handled vary. If interested, please consult an adviser so you can help LVAAS today!

https://lvaas.org/page.php?page=using_rmd_to_support_lvaas



Cover image: M66 NGC 3627 imaged by Warren Landis

"My second completed target of the season M66: The Leo Triplet is a continuation of my trying to complete the Messier Catalog. The image was taken from my backyard observatory located in lovely downtown Allentown. The warm weather has allowed me to continue to fine-tune my 'Medusa' setup." ~ Imaged March 22, 2021.

* Celestron 8" SCT, Celestron Focus Motor, ZWO OAG, ZWO ASI174-mini, ZWO Filter Drawer, ZWO ASI1600mm-cool.



Night Sky Notebook For AUGUST by Peter Detterline





First, a quick update on cutting the aluminum panels for the main mirror covers, as discussed last month. A couple of us visited our friend with the big shear, and we determined that it is the perfect tool for the job. It is similar to the unit shown at this link. So, I have obtained the rest of the panels from Observatory Director Frank Lyter and I've started getting them cleaned up and laid out for the cutting.

On designing the main baffle - this is a piece of the design that is required to limit the amount of stray light that will reach the image plane. In a Cassegrain telescope, an outer tube is not required. Its function is instead performed by the main baffle tube that sticks up through the central hole in the main mirror. Our main baffle needs to be about 5 feet long and 7 inches in diameter. Long-time LVAAS member Preston Smith has a tube from a 6-inch Newtonian that might work, and which he has indicated that he is willing to donate.

I've been pondering how to mount this component for a while, and I recently had what I think is a minor conceptual breakthrough, just in time since I am about ready to start working out the details. The mounting situation for this requires a flat aluminum plate, about 12 inches in diameter, with a 7-inch opening that defines the bottom end of the tube. Ideally, the tube will be aligned perfectly perpendicular to the plate, and while I think that might be OK, there is a possible need for adjustment that has been niggling me.

The main mirror, as in most telescopes, has three adjustment screws that allow it to be slightly tilted with respect to the tube assembly, to allow the optical path to be perfectly aligned. Although I think it is unlikely, it is possible that we might want to adjust the angle of the main baffle as well. I've been considering ideas that would look something like a big pipe flange, with adjustment screws of some sort on the inside of the cylindrical part to allow aiming the baffle tube similarly to how a finder scope is aligned. It would need to be machined out of a big, expensive block of solid aluminum, or else fabricated from a section of thick-wall tubing somehow joined to the 12-inch flat plate.

The new idea is a variation of the 2-piece construction which is shown in the illustration (next page.) Instead of a tubular piece joined to a flat piece, we will use two flat pieces fastened together. These

pieces of aluminum plate will probably be a lot less expensive and easier to work with than the bulky block that I was thinking about.

I think it will be reasonably easy to join the baffle tube to the smaller round plate, which would be about an inch thick. But, it would be really hard to provide for any adjustment in this joint. To be honest, it would probably be easiest to just epoxy them together, although we could probably use screws instead.



The new thinking with this idea is that the two parts of the mounting

arrangement, in this case the two plates, do NOT need to be permanently joined! They can be simply bolted together using a pattern of 1/4-inch holes. And then, if it turns out that some adjustment is needed, we can retrofit it fairly easily. For example, we can add some shims between the two plates, or even drill and tap some additional holes and add adjusting screws, if necessary.

I think this is a good compromise that allows for the possibility of future adjustment without investing a lot of effort and money on a feature that we might not need; and it gives us a mounting system for the main baffle that will be inexpensive and reasonably easy to build.

Design process - the first step in working out the details is to determine exactly where we want the end of the baffle tube to be, and what its optimum diameter should be. I have an idea of these values from a diagram of the telescope layout that I created using Inkscape. But I don't fully trust that result, because Inkscape is intended for producing nice-looking illustrations, not for precision geometric design.

Instead I would like to use an optical ray-tracing program, or ideally, compare results from two such programs. I spent a couple of hours reviewing what is currently available for this purpose, and concluded that the two programs I am already using are still the best choices.

The first of these is OSLO EDU from Lambda Research, a version of their optical design program that is free for educational use. I have already used it to work out the basic optical design of the telescope. For this I will probably need to simulate the end of the baffle as two zero-thickness lenses, one with diameter equal to the inside of the baffle, the other with a hole equal to the outside of the baffle. It should work but that's why I want to see the same result from another program.

That will be **BEAM FOUR** from Stellar Software. It is less user-friendly and has fewer analysis features compared to OSLO, but it can simulate things like tilt and offset in the optical elements, which I have used to analyze the tolerance of our design to misalignment. You can also read ray coordinates directly from its output, which is great for getting baffle geometry. And I also like that it is open-source. I've already taken advantage of the ability to modify it.

From the LVAAS Archives:



Amateurs Join The War Effort

by Sandy Mesics

In August 1941 even though the United States was not yet officially at war, preparations for defense were underway. These preparations reached into almost every aspect of life, and amateur astronomy groups were no exception.

In 1941, the local astronomy group was our predecessor, the Lehigh Valley Astronomical Society (LVAS). The group met monthly at the home of L.H. Cutten in West Allentown. Cutten was an avid amateur silversmith, and an amateur astronomer who worked as an engineer for Mack Truck. The group published a monthly newsletter and carried on correspondence with other clubs and notable astronomers, including Russell Porter and Albert Ingalls.

In the archives, I came across an interesting letter from Albert Ingalls and LVAS secretary Lionel Adda, seen below. Albert Ingalls was the Scientific American editor who was responsible for publishing the three-volume work that became the bible for amateur telescope makers, Amateur Telescope Making. In 1941, he was in the process of publishing the second edition of volume one and had corresponded with the LVAS about the size of the club and how many members had built telescopes.

But as the war effort gathered momentum, he, along with Russell Porter of Hale Telescope fame, were organizing amateur telescope makers (ATMs) to produce roof prisms. Roof prisms, also called Amici prisms, are reflective optical prisms containing a section where two faces meet at a 90° angle. These two 90° faces resemble the roof of a building, giving this prism type its name. Reflection from the two 90° faces returns an image that is flipped laterally across the axis where the faces meet. A roof prism has only four polished, flat, optical faces. These prisms were essential for bomb sights and other military instruments.

Ingalls and Porter would round up about 80 amateur telescope makers to participate in this project. These individuals would go on to become the famous "Roof Prism Gang." The members of the Roof Prism Gang were pretty much an average cross-section of American ATMs: there were accountants, biologists, physicists, chemists, engineers, cabinet workers, candy makers, dentists, a gravestone maker, and a steel worker. Ingalls addressed his correspondents as "prismartyrs," "prismachers," and "fellow workers." These ATMs worked through 1943, each working under identical instruction with optical glass supplied by the United States Army's Frankford Arsenal.

The concept Porter developed was "blocking." This involves the mounting of several items: lenses, mirrors, or prisms, onto a single tool, called the "block." The blocking jig permitted the worker to make components in quantity, as long as the components were identical. The prisms had to be rough-cut out of slabs of optical glass, were then mounted to a blocking jig, and then each face was ground and polished to very specific angles. Much of the final polishing work was done by hand.

Volunteers were asked to produce a single prism, and if this was acceptable, they were asked to produce prisms in batches of 25 to 50 at a time. Tooling up for roof prism work cost about one or two hundred dollars: ATMs usually already owned part of the equipment, having used it for telescope making. While work was underway, the Gang communicated by means of a monthly mimeographed newsletter. The newsletter served as a virtual monthly meeting by which manufacturing techniques could be shared.

Scien	TIFIC	Amer	ICAN

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24 WEST 40TH STREET

August 29, 1941

Mr. Lionel Adda 442 Greenleaf St. Allentown, Pa.

Dear Adda:

Porter and I have been organizing the advanced . amateur telescope makers to make roof prisms at home for Defense, as sub-contractors, and the movement is well under way. If you have made several first-class mirrors, or a good O.G., or a successful Schmidt, or some good flats, and can work a surface to better than a tenth wave, or if you know of any amateur who can and is interested, will you please let me know.

Men of this ability should net \$25 a day and be their osn boss making roof prisms at home, after organizing their shops and making several hundred dollars outlay for special tools. One amateur, Ferson, is doing it now.

Special instructions have been hastily got upeight photostats from Porter's data, with drawings, five other photostats, also mimeographed data by Ferson, are now available through me at a dollar (not trying to sell you anything--that's less than our costs). A round-up on roof prism making data.

This is work for the very ablest amateurs--suggest not getting others all stirred up. Also reasonable hurry.

Cordially yours,

AlbertG.Ingalls Associate Editor

Incolo

AGI :ME

WE CAN SUPPLY ANY BOOK IN PRINT -

While the government was reluctant to employ "amateurs" in this effort, but ultimately the Roof Prism Gang was able to produce 28,420 prisms, about ten percent of the total.

What motivated The Roof Prism Gang? Of course, patriotism, pride, and to a lesser extent, profit. The participants were paid \$15 per acceptable prism. One gang member said, "My main ambition is to get something made with my own hands into U.S. fire control equipment and doing things to Berlin and Tokyo. If I can accomplish this, I'll feel well repaid for my work, and to Hell with the money." In fact, at least one gang member tried to donate his payment back to the government to aid the war effort.

The records show that no LVAS members were members of the Roof Prism Gang, but at least six LVAS members went on to serve in World War II. Lionel Adda, then LVAS secretary, would go on to serve in World War II. He was drafted in 1942 and became a Sergeant in the Army, D Company 393rd Infantry, 99th Division.



He served in the European theatre and participated in the Battle of the Bulge. Adda returned after the war, went on to earn and engineering degree and ultimately a PhD in Physics from Lehigh University. He was on the team at Western Electric that developed the transistor.

LVAS itself would go on hiatus in August 1942 and did not begin reorganizing until Fall 1945.

References

Albert G. Ingalls. A Hobby Goes to War: Scientific American's Amateur Telescope Makers Find Their Peacetime Optical Skills are a Wartime Asset. Scientific American, May 1943, 202-205. http://home.europa.com/~telscope/rfprmgng.txt

by Gary A. Becker

beckerg@moravian.edu garyabecker@gmail.com astronomy.org facebook.com/StarWatchAstro/ ©Gary A. Becker for StarWatch



A Great Year For The Perseids

Wednesday morning through Friday morning, August 11-13, will present a wonderful opportunity to view the 2021 Perseid meteor shower. Many astronomy enthusiasts call the Perseids the best shooting star event of the year and for good reason. It combines relatively high rates with warm summer evenings that are relatively short.

Meteor showers are the result of debris released by comets as they orbit the sun. If a comet's path crosses the plane of Earth's orbit or comes near to it, an annual meteor shower will most likely be the result. The progenitor of the Perseids is Comet 109P/Swift-Tuttle which last returned to the sun in 1992 and is expected to debut again in 2125. As a result of its many passages around Sol, debris has been spread fairly uniformly across all of its orbital path, enhancing the reliability of the Perseids to produce a consistent showing year after year.

The best advice for observing is not to start too early in the evening. Midnight is a good target time to begin observing because prior to that we are protected by the Earth itself. The analogy is similar to raindrops hitting a vehicle moving through a downpour. The precipitation is preferentially striking the front windshield of your car while the rear window gets only a little rain because it is protected by the automobile. Likewise, in the early evening we are being shielded by the Earth and see reduced meteor activity. As local midnight approaches, the Earth begins to rotate into the meteoroids, allowing it to sweep up more of these particles, resulting in an upsurge of activity.

In the midnight hour some of the colliding Perseids will be skimming the top of the Earth's atmosphere. These events can create long bright trails, sometimes fireballs, as they are ablated (destroyed) more slowly by the thinner layers of air. This year, Asia is the favored location for peak rates which can be as high as a meteor per minute for an observer with keen vision viewing from a rural locale. According to the International Meteor Organization, the East Coast sees peak rates occurring between 10 a.m. through 11 p.m. August 12. This means that enhanced meteor activity will most likely happen on both the mornings of August 12 as well as the 13th.

Perseids are easily identified because they will appear to diverge from a vanishing point, similar to how a long, straight stretch of roadway will appear to narrow and converge at some distant location. They will radiate from the top of the upside-down, V-shaped constellation of Perseus. See a map here. Virtually all of the shooting stars that trace back to this region of the sky will be Perseids

This is the week before maximum; so don't expect to see many Perseids flying across the heavens, but those that are witnessed will have a tendency to be brighter with more fireballs being spotted before maximum than post-maximum nights. This was the case for the evenings that I observed the Perseids on the banks of Flathead Lake in northwestern Montana in 2016 and from Guernsey State Park in Wyoming in 2018. I saw brighter meteors on maximum night than on the following evening. Rates also dropped to about half of the activity of the previous night. That again is very consistent with normal Perseid encounters.

Perseid meteor rates will climb steadily this week; just don't expect to see one every couple of minutes. Observing on August 1, anticipate one or two Perseids in the predawn hours. By August 10, rates should have climbed to 10-15 meteors each hour, if you are in a rural locale.

More information about the Perseids will follow in next week's article. (StarWatch at astronomy.org) Think clear skies mixed with a couple of bright fireballs!



The Perseid Meteor Shower radiant is seen in map form with the shower meteors streaming from the top of the constellation of Perseus the Hero. The time is midnight. Map by Gary A. Becker using Software Bisque's, The Sky...

Sky Above 40°33'58"N 75°26'5"W Thursday August 5, 2021 23:00 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/

AUGUST 2021

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<u>01</u>	<u>02</u>	<u>03</u>	<u>04</u>	<u>05</u>	<u>06</u>	General Meeting <u>07</u> Pulpit Rock - 7:00 PM
New Moon <u>08</u> General Meeting Pulpit Rock (rain date) - 7:00 PM	<u>09</u>	<u>10</u>	11	12	<u>13</u>	Members Only Star <u>14</u> Party
First Quarter Moon <u>15</u>	<u>16</u>	17	<u>18</u>	<u>19</u>	<u>20</u>	21
Full Moon 22 Deadline for submissions to the Observer	23	24	<u>25</u>	<u>26</u>	27	<u>28</u>
LVAAS Board of 29 Governors Meeting	Last Quarter Moon <u>30</u>	31				

SEPTEMBER 2021

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			<u>01</u>	<u>02</u>	<u>03</u>	<u>04</u>
<u>05</u>	Labor Day 06	<u>07</u>	<u>08</u>	<u>09</u>	<u>10</u>	11
	New Moon					
General Meeting - 7:00 <u>12</u> PM	First Quarter Moon <u>13</u>	14	<u>15</u>	<u>16</u>	17	<u>18</u>
Deadline for <u>19</u> submissions to the Observer	Full Moon 20	21	22	23	24	25
LVAAS Board of <u>26</u> Governors Meeting	27	Last Quarter Moon 28	29	<u>30</u>		

Lehigh Valley Amateur Astronon	nical Society	ATEUR	ASTRO
Pay online via Credit Card, Debit Card or PayPal: https://www.paypal.com/donate/?hosted_button_id=FBP8Y OR Make check out to: LVAAS Mail your completed application(s) forms and check it LVAAS MEMBERSHIP c/o Gwyn Fowler 97 Yeager Road Lenhartsville, PA 19534	5VX5QXNW f applicable to:	THE REPORT OF TH	AAS LINES
Name:	Are you ag	e 18 or older? Yes	No
Address:	City:	State:	Zip:
Email Address:	Pho	ne Number:	
Occupation (Optional):	_		
Where did you first hear about LVAAS?			
Specific Astronomical Interests:			
Are you a member of other Astronomical Societies?			
Please list any astronomical instruments owned:			
Experience in Astronomy (circle one): Novice	Amateur Advance	ed Amateur Profe	essional
Type of Membership (circle one): Full-time student: \$15 Individual: \$45	5 Family: \$65 Sus	taining: \$90 Life:	\$675
Are you a part of a Family Membership?: (Note: Each family member must have a com	les: No: pleted application reg	 ardless of age)	
To protect your privacy, LVAAS does not share perso express consent of the member.	onal member informa	tion with any 3 rd part	y without the
Donations are Would you like to give an additional donation? If so please specify (e.g. roof, Prod, 40" telescope). Donat	greatly appreciated! , please list the amour ion:	nt. If you want it to b	e designated
Committe	ee Use Only:		

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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 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 always welcome.

LVAAS members please feel free to submit ads for astronomy equipment you have for sale, and additionally you may sponsor a maximum of three ads from non-members per year. Please submit your finished ad as a PDF, with pictures and text. Every attempt will be made to include submissions in a timely manner.

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