

# The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

<https://lvaas.org/>

<https://www.facebook.com/lvaas.astro>

January 2022

Volume 62 Issue 01





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

The 2022 Budget was approved by the membership at the December 12 General Meeting. I would like to thank our Board of Governors for their hard work in ensuring LVAAS's financial future. While I am giving out thanks, I would also like to thank our outgoing officers Gwyn Fowler and Dennis Decker for their excellent support as Treasurer and Secretary over the last two years and welcome our new officers Michael Huber (Secretary) and Blair Hogg (Treasurer). Without the support of helpful volunteers, a society like ours could not survive.

You may not have noticed, but the interest in astronomy has been picking up over the last year. Our membership, which typically is around 250 people, has increased to 312 people. I would like to welcome all our new members and I look forward to meeting them at various club events. Also, we have received inquiries from other local astronomy clubs about having some joint get togethers. We think this is a great idea and will be working at pursuing these activities. One possibility is to invite other local clubs to Megameet, our no-frills get-together in May at Pulpit Rock.

Looking forward to 2022, we are already seeing amazing new events relating to astronomy. I was excited to watch the successful launch of the James Webb Space Telescope. The Hubble Space Telescope has kept us entertained since 1990 and the James Webb promises to be even better. Below are some links to information about the James Webb:

“The Insane Engineering of James Webb Telescope, from “Real Engineering””

<https://www.youtube.com/watch?v=aICaAEXDJQQ&t=24s>

“Where is James Webb?”

<https://webb.nasa.gov/content/webbLaunch/whereIsWebb.html>

Bill Dahlenburg has volunteered to take the position of Star Party Coordinator. I would like to ask everyone to please support Bill in running the Star Parties. We are always looking for people to assist with parking, run the Red Shift, run the telescopes, and assist wherever necessary. Your help will be greatly appreciated. Please contact Preston Smith if you would like to volunteer. His email is on the LVAAS Website Contacts page.

Ad Astra!

Thomas Duff



# LVAAS Meteor All Sky Camera Project!

LVAAS is looking for volunteer members to participate in a first ever, winter project to assemble Meteor All Sky Cameras for use at our South Mountain & Pulpit Rock Observatory Sites.

The project is intended to involve volunteers of all experience levels to build Meteor All Sky Cameras based on the Raspberry PI platform that will be installed at LVAAS observatory sites.



Meteor in Ursa Major by Frank Lyter

LVAAS is picking up the material costs for the units and will be facilitating the build via remote Zoom sessions and in-person events for field testing and deployment.

We are encouraging members with little to no experience in these types of systems to actively participate with demonstrations, coaching and troubleshooting assistance from more experienced members. Using Zoom for most of the activities will minimize travel and encourage active participation or simply observing the process. Volunteers are welcome to purchase their own parts and participate in that manner if they wanted their own for home. The unit cost expected to be approximately \$200.

Activities include:

- Setup & Configuration of Raspberry Pi with suggested applications
- Networking of Raspberry Pi for downloading images & remote access
- 3d Part / Enclosure design & printing (e.g. via Fusion 360)

Reference: Make Magazine Article:

<https://makezine.com/projects/raspberry-pi-meteor-camera/>

Contact us if you would like to participate or have any questions!

Blaine Easterwood-Education Director - [blaine@ieee.org](mailto:blaine@ieee.org)

Frank Lyter-Pulpit Rock Observatory Director - [flyter@ptd.net](mailto:flyter@ptd.net)

## Minutes from the LVAAS General Meeting – December 12, 2021

The December 2021 LVAAS General Meeting **was conducted** electronically using an on-line service. Approximately 30 people were in attendance.

Director Tom Duff opened the meeting at 7:02 p.m.

Maddie Salter gave a presentation on her project in astronomy with the PA Junior Academy of Science. The project involved documenting the brightness of supergiant stars over 20 days, comparing against control stars, and calculating the minimum, maximum, and average brightness of each star.

Tonight's General Meeting's presentation was "Comet Tails: An Introduction to the Mythology and Science of Comets", along with how to observe them by Larry McHenry. Larry McHenry has been active in amateur astronomy for over 40 years, and is a member of the Kiski Astronomers, and the Oil Region Astronomical Society (ORAS) in Western Pennsylvania. You can learn more about Larry's astronomical interests online at his webportal: <http://www.stellar-journeys.org>

### Treasurers Report: Blair Hogg

- Nothing to report.

### Membership: Rich Hogg

- 2nd readings
  - Conor Just
  - Marie Oliver
- 1st readings
  - Steve Vlasak



## General Comments:

- Tom Duff officially called the business meeting to order at 8:39 p.m.
- Rich Hogg motioned to approve the budget. Bill Dahlenburg seconded.
- Budget accepted by general membership vote of 25 to 16.
- Ron Kunkel motioned to close the business meeting. Sandy Mesics seconded.
- Tom Duff loaded new calendar events onto the website calendar, including Astro-imaging meets.
- January meeting will be Zoom only.
  - Paul Halpern will be presenting his book, “Flashes of Creation”.
    - Debate about Big Bang Theory between Fred Hoyle and George Gamow.
- February and March meetings will be held in person at Muhlenberg and online via Zoom at 3 p.m.
- Leather jacket found in planetarium at South Mountain. Anyone who can positively identify the jacket can claim it.
- Frank Lyter – Group of members to meet somewhere to view comet Leonard sometime soon.

## South Mountain Maintenance – Bill Dahlenburg

- None

## Pulpit Rock Observatories – Frank Lyter

- Meteor camera project.
  - 2 members expressed interest in creating some for Pulpit Rock and South Mountain.
  - Article on how to make it in *Make Magazine*.
  - Add one of the cameras to 12” Meade for members to plug in with their laptops, etc.
- Arduino encoders for the 17” Dobsonian

- Connect wirelessly to iPad with Sky Safari

Next General Meeting:

- In January, Paul Halpern will be talking about his book, "Flashes of Creation."
- In February, James Chen will be speaking. Topic TBA.
- In March, Felipe Maldonado from the DaVinci Science Center will likely speak on the Big Bang.
- As of now, the January meeting will be held online only via Zoom, but February and March General Meetings will be held in person at Muhlenberg and online, conditional on their rules permitting it at the time. Meetings will begin at 3 p.m.

The December General Meeting was recorded.

The meeting was adjourned at approximately 9:00 p.m.

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Submitted by Michael Huber, Secretary

\*The meeting times have been updated to reflect additional developments as of January 3, 2022.

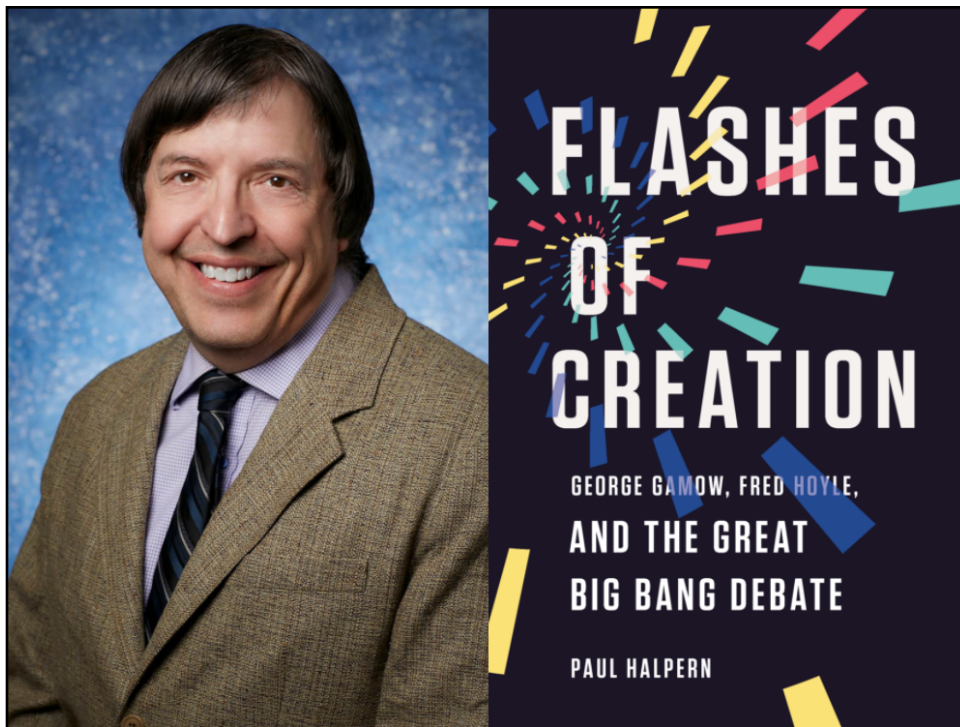
**LVAAS General Meeting: Online only**  
**Sunday, January 9, 3:00 p.m.**

## **Flashes of Creation: George Gamow, Fred Hoyle, and the Great Big Bang Debate**

*presented by*

**Paul Halpern**

*A respected physics professor and author breaks down the great debate over the Big Bang and the continuing quest to understand the fate of the universe.*



Today, the Big Bang is so entrenched in our understanding of the cosmos that to doubt it would seem crazy. But as Paul Halpern shows in *Flashes of Creation*, just decades ago its mere mention caused sparks to fly. At the center of the debate were Russian American physicist George Gamow and British astrophysicist Fred Hoyle. Gamow insisted that a fiery explosion explained how the elements of the universe were created. Attacking the idea as half-baked, Hoyle countered that the universe was engaged in a never-ending process of creation. The battle was fierce. In the end, Gamow turned out to be right -- mostly -- and Hoyle, despite his many achievements, is remembered for giving the theory the silliest possible name: "The Big Bang." Halpern captures the brilliance of both thinkers and reminds us that even those proved wrong have much to teach us about boldness, imagination, and the universe itself.

Paul Halpern is a professor of physics at the University of the Sciences in Philadelphia and the author of sixteen popular science books, including *The Quantum Labyrinth*, *Einstein's Dice* and *Schrodinger's Cat*, and *Synchronicity*. He is the recipient of a Guggenheim Fellowship and is a Fellow of the American Physical Society. He lives near Philadelphia, Pennsylvania.

***LVAAS Members will receive an email with meeting invitation/link. Prospective new members who wish to attend the online meeting please email [membership@lvaas.org](mailto:membership@lvaas.org)***



### ***Via Sandy Mesics: Upcoming LVAAS General Meeting Speakers***

Please consider volunteering as a speaker at one of our upcoming general meetings! Here's our lineup:

In January, **Paul Halpern** will speak about his book, "**Flashes of Creation.**"

In February, **James Chen** will be speaking; topic TBA

In March, **Felipe Maldonado** from DaVinci Center will speak on the **Big Bang**

In April, **Doug Arion** will speak on "**Threats to Astronomy from Ground and Space.**"

### ***Via Dave Raker: New Library Books***

Stargazer's Companion by Robert Dinwiddle

Dark Matter & Dark Energy by Brian Clegg

The God Equation by Michio Kaku

The Secret Lives of Planets by Paul Murdin

Apollo 1 by Ryan Walters

Across the Airless Void (The Lunar Rover) by Earl Swift

Deep-Sky Wonders by Sue French

The Planets (no author given)

### ***Via Michael Lincoln and Eric Loch: International Dark Sky Association Petition***

Please access and sign the petition to create legislation to save our dark skies at this link:

<https://www.change.org/p/senator-carolyn-comitta-improve-and-protect-dark-skies-of-pa?redirect=false>

### ***Via Earl Pursell, UACNJ Liason: Winter Remote Programs***

During the off-season (November through March) UACNJ is now presenting an online astronomy-related presentation that begins at 8 p.m. You can tune in by visiting us at our [YouTube channel](#), or by clicking the name of the program. You can also subscribe to our YouTube channel to get notifications when our presentations go live. The link to the online program page is: <http://www.uacnj.org/onlineprograms.php>

UACNJ currently has the first Saturday of each month scheduled for **What's Up in This Month's Night Sky**.

### ***Via Earl Pursell: Lockheed-Martin Spacemakers Podcast***

[Launched Sept 1]...go behind the scenes of some of the greatest space exploration missions of our time, and... chat with our experts about how these missions are shaping the future of space..." click [here](#)

Also, **Dark Skies Talk** by Douglas Arion: <https://www.youtube.com/watch?v=zf9Lj5bymd4>

### ***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](https://lvaas.org/page.php?page=using_rmd_to_support_lvaas)



**Cover image: Aurora over Iceland Imager: Mike Waddell**

Please enjoy reading about Mike's recent astronomical adventures on page 16!

**Keep warm this observing season  
... with LVAAS logo gear,  
featuring our vintage 1959 logo!**



**Left: Zip up in this ultra-soft hooded sweatshirt. Ultra soft 65% cotton, 35% polyester fleece. Jersey lined hood, low-pill, high-stitch density fabric. Roomy front pockets. Machine wash and dry. Sizes S-2XL.**

**Only \$44.99**

**Right: Our super-soft, ultra-comfortable women's nightshirt. 100% cotton, machine wash and dry. In heater gray or pink. Sizes S-3XL.**

**Only \$29.99**



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visit our online LVAAS Redshift Store:**

**<https://www.cafepress.com/lvaasredshiftonlinestore>**





# *Night Sky Notebook* *for* **JANUARY**

by **Peter Detterline**

## Night Sky Notebook

what you see when you look up



Peter  
Detterline



*From the LVAAS Archives:*

## The Ubiquitous 35mm Film Canister

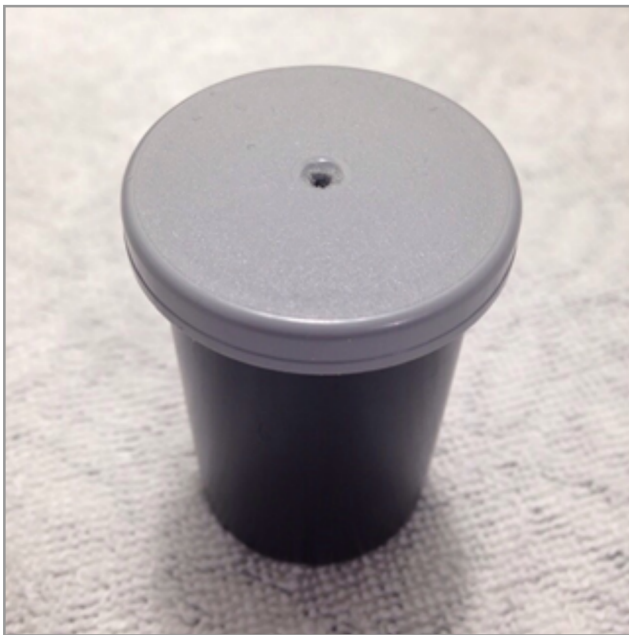
by Sandy Mesics

Fifty years ago, astroimaging wasn't a pursuit for the faint of heart. CCDs and CMOS were years in the future. Film ruled: high speed films pushed even higher by techniques such as hypering, which involved soaking or flushing photographic film in a hydrogen/nitrogen mixture, sometimes with heating. And 35 mm film cans were more than readily available. In the January 1972 *Observer*, there was this short notice about a novel way to align a Newtonian reflector:



HERE'S A COLLIMATING EYEPIECE that can be made easily and at little, if any, expense. This idea has been making the rounds of various newsletters and we saw it in the Baltimore AS Bulletin. The aluminum 35 MM film cartridge container is of the same dimension as a standard 1 1/4" X 12.5 MM eyepiece. Cut out the bottom, darken the inside with paint or paper, drill a 1/8" hole in the cap and you have a handy accessory for your reflector. Need a film container? Just ask around the camera bugs.

Well, since 1972 The Baltimore Astronomical Society has disbanded, and unfortunately copies of their bulletin are no longer easily available. And, of course, with the exception of a few artistic photographers, the way of the film camera has passed as well. So, asking “camera bugs” for 35 mm film canisters probably will lead to quizzical looks, but few film canisters.



This alignment technique using this method, however, is actually very useful. According to ATM guru Gary Seronik, this simple collimation cap is an effective, low-cost way of aligning a Newtonian reflector. It's very accurate, easy to make and easy to use. Now manufacturers such as Orion supply one of these with their reflectors.

But there is another use for those canisters: I learned this trick from Bill Dahlenburg: You can take one of these film canisters, drill a bunch of small holes in the base, and fill the container with desiccant. Then when you store your scope, put the cap into the eyepiece end and it will help keep your optics clean and dry.

An empty film canister with the bottom cut out can be used to make a simple adapter for .965" eyepieces to 1-1/4" focusers. There are still some decent .965 eyepieces around (Zeiss for one), so this simple hack can keep them in use. There isn't much information out there on the interwebs, but it is possible to glue lenses to the inside of a canister to make an eyepiece from scratch.

In the early days of CMOS imaging, many of us modified webcams to become planetary imagers. With both ends of the canister removed, it could be glued to the webcam, and presto, an astronomy webcam. For more sophisticated astroimagers, film canisters can be used to store SD memory cards: with some foam packing added to the bottom of a canister, you can fit about 9 SD cards in one canister.

Years ago, I used a film canister to house the light source for my homebuilt Foucault tester. I simply drilled a hole in the side for the pinpoint light source.

You could also easily cut a slit in it for a slit light source.

Of course, there are thousands of non-astronomical uses for film canisters: If you don't believe me, enter that search into your preferred search engine, and you will be entertained for hours. In general, I find them useful for storing small things that otherwise get lost.

Despite the paucity of people still using 35 mm film, you can still get plastic canisters online: Amazon has them for about 28 cents apiece, depending on the quantity you buy. The metal ones are a bit harder to find, and generally more expensive. I have seen them on eBay.

Do any readers of this column have any other uses for these film canisters? I would love to hear from you: drop me a line at [astrosandy@gmail.com](mailto:astrosandy@gmail.com)



## Reference

*The Observer*, January 1972

# StarWatch

by **Gary A. Becker**

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[astronomy.org](http://astronomy.org) [facebook.com/StarWatchAstro/](https://facebook.com/StarWatchAstro/)

©Gary A. Becker for StarWatch



## The View in '22

There are four major events that occur during 2022, and I'd like to introduce them to you. There will be much more to say in future StarWatch blogs when each of them transpires. Two total lunar eclipses grace North America during 2022, one on May 16 and the other on November 8. These eclipses occur when the full moon intersects the Earth's shadow as Luna passes through the Earth's orbital plane. Unlike the partial phases of solar eclipses which are dangerous to observe without the proper filtration or projection techniques, lunar eclipses are perfectly safe to watch at all times. If you can observe the full moon without filtration through binoculars and telescopes, then you can watch the full moon travel into the shadow of the Earth. In addition, lunar eclipses can be very colorful events with reds, oranges, yellows, browns, and even occasionally small areas of blues visible on the moon's surface.

By far the eclipse that will rob you of the least amount of sleep is the Monday into Tuesday, May 16/17 event. The eastern half of North America and all of South America get to participate in all aspects of this happening. The moon enters the main shadow of Earth at 10:27 p.m., totality begins at 11:29 p.m., and ends at 12:54 a.m. on May 17. Luna is completely immersed within Earth's shadow for 85 minutes, with the high north polar regions of the moon passing through the center of the shadow, something I have not experienced in decades of lunar eclipse watching. The gradation of colors could be spectacular.

It had better be clear for this eclipse and the one that follows on Election Day, November 8. Here you will need to brace yourself for an early rising, for the moon does not begin to pierce Earth's main shadow until 4:09 a.m. Totality commences at 5:17 a.m. The moon sets just as totality is ending, and the sun is rising over the Lehigh Valley at about 6:46 a.m. You'll need a good WNW horizon for this eclipse, for when the moon first makes contact with Earth's primary shadow, it will only be 27 degrees above the western horizon. When totality commences at 5:17 a.m., Luna will have descended to only 15 degrees atop the horizon.



By 5:50 a.m. the western sky will be filling in with deep twilight, but that could make for some interesting photography, especially through telescopes and telephoto lenses, imaging the totally eclipsed reddened moon against a deep lapis sky background.

The other two events involve the planets, all of them including dwarf planet Pluto, strung across the sky like a loosely beaded necklace. These are events that occur over several weeks and also involve the moon too! Starting around the second week in June through the month's end, all of the planets will be positioned in the morning sky about 30 minutes before sunrise. The same will be true for the evening sky, starting in mid-December through the end of 2022. You'll need binoculars to view Uranus and Neptune and a good-sized telescope to see Pluto, but they will all be there in the sky at the same time. In both cases the moon will be jogging through the scene too!

A happy, healthful, and productive New Year to everyone. Keep looking up. Ad Astra!

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**Comet Leonard** was photographed on windy, cold, December 19, four days after an outburst that increased its brightness by five-fold. However, by the 19th the comet had faded to its predicted fifth magnitude. The exceptionally clear weather on December 19 allowed the comet to be photographed as it approached the treetops which were about four degrees above the true horizon. Leonard's tail was visible through 10x50 binoculars, but no evidence of the comet was seen with the unaided eye. The nearly full moon was in the ENE, opposite to the comet. Venus gleamed in the upper right of the digital photo over 4000 times brighter than Leonard. The limiting magnitude near the comet was +9.6, a tribute to the clarity of the atmosphere that evening. Image by Gary A. Becker...



**Comet A1 Leonard**

December 5, 2021, taken remotely at the Mars Desert Research Station, Utah

StellarVue 70mm Refractor Lum Filter 60 second exposure

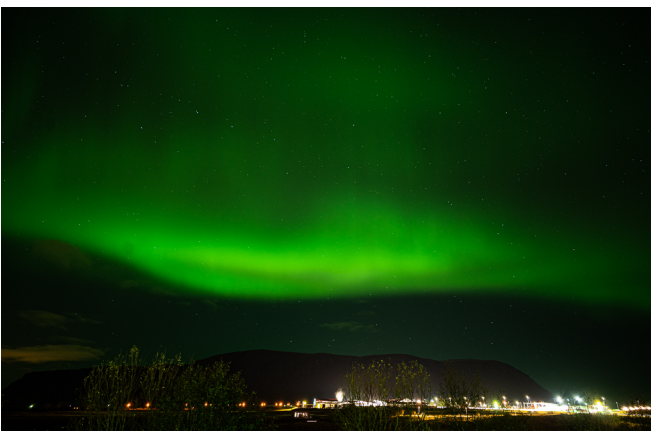
Imager: Peter Detterline





Sometimes it seems like there's nothing to see in the night skies and then, voila, it's a cornucopia of cosmic delights! The tipping point from "uninspired" to "eager for nighttime" for me was when I saw that Ray Harris was going to do the Planet Walk in the Parkway. I'd heard about this but never took the time to find it and read the plaques for each planet. So, on September 25 I made my way to the Lehigh Parkway where Ray did a great job explaining the origin and importance of the Planet Walk as he escorted us from the Sun to Pluto and back. The ratio of the distances between the inner and outer planets was something that I'll always remember because it is now physically etched in my mind.

Next came my virgin trip to Cherry Springs on October 1-3. Eric Loch had invited me numerous times over the past few years to make the trek to Potter County, aka "God's Country," and I always found an excuse, but this time I just had to check that box. So, with Eric's gold standard packing list I geared up and left Friday morning for what turned out to be two beautiful nights of observing and imaging that just can't be done in the light strewn Lehigh Valley. Yes, it was a four-hour trip (I'm a slow driver) and I slept in a tent (provided by Eric!) on an air mattress for the first time in 60 years, but it was worth all of it for the images I got of the Milky Way. My only regret is that I deleted the pictures I took of Tom and Bill napping in their special chairs on Saturday afternoon!



They say things come in 3's so there had to be a third astronomical gift, and that turned out to be a trip to Iceland (delayed from 2020) where I hoped to get some Northern Lights shots. We arrived in Reykjavik Saturday morning, October 9. The tour was a seven day bus trip with 40 other travelers (lots of gray hair) around the Golden Circle, which produced lots of interesting images of volcanoes, glaciers, lava fields and waterfalls - but the best was a northern lights

display Sunday night in Selfoss that turned out to be the only night we saw them. Fortunately, our tour director was a good photographer who knew exactly where we needed to be to get great shots of this amazing natural phenomenon. My only regret was that I didn't do video...maybe next time?



**Sky Above 40°33'58"N 75°26'5"W Tuesday January 4, 2022 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/>

## JANUARY 2022

| SUNDAY                                             | MONDAY              | TUESDAY                     | WEDNESDAY | THURSDAY  | FRIDAY    | SATURDAY                |
|----------------------------------------------------|---------------------|-----------------------------|-----------|-----------|-----------|-------------------------|
|                                                    |                     |                             |           |           |           | New Years Day <u>01</u> |
|                                                    |                     |                             |           |           |           |                         |
| New Moon <u>02</u>                                 | <u>03</u>           | <u>04</u>                   | <u>05</u> | <u>06</u> | <u>07</u> | <u>08</u>               |
| Winter Project - Meteor Camera Build               |                     |                             |           |           |           |                         |
|                                                    |                     |                             |           |           |           |                         |
| First Quarter Moon <u>09</u>                       | <u>10</u>           | <u>11</u>                   | <u>12</u> | <u>13</u> | <u>14</u> | <u>15</u>               |
| General Meeting - 3:00 PM                          |                     |                             |           |           |           |                         |
|                                                    |                     |                             |           |           |           |                         |
| <u>16</u>                                          | Full Moon <u>17</u> | <u>18</u>                   | <u>19</u> | <u>20</u> | <u>21</u> | <u>22</u>               |
|                                                    |                     |                             |           |           |           |                         |
| Deadline for submissions to the Observer <u>23</u> | <u>24</u>           | Last Quarter Moon <u>25</u> | <u>26</u> | <u>27</u> | <u>28</u> | <u>29</u>               |
|                                                    |                     |                             |           |           |           |                         |
| LVAAS Board of Governors Meeting <u>30</u>         | <u>31</u>           |                             |           |           |           |                         |
|                                                    |                     |                             |           |           |           |                         |

## FEBRUARY 2022

| SUNDAY                                             | MONDAY    | TUESDAY                      | WEDNESDAY                   | THURSDAY  | FRIDAY    | SATURDAY  |
|----------------------------------------------------|-----------|------------------------------|-----------------------------|-----------|-----------|-----------|
|                                                    |           | New Moon <u>01</u>           | <u>02</u>                   | <u>03</u> | <u>04</u> | <u>05</u> |
|                                                    |           |                              |                             |           |           |           |
| General Meeting - 3:00 PM <u>06</u>                | <u>07</u> | First Quarter Moon <u>08</u> | <u>09</u>                   | <u>10</u> | <u>11</u> | <u>12</u> |
|                                                    |           |                              |                             |           |           |           |
| <u>13</u>                                          | <u>14</u> | <u>15</u>                    | Full Moon <u>16</u>         | <u>17</u> | <u>18</u> | <u>19</u> |
|                                                    |           |                              |                             |           |           |           |
| Deadline for submissions to the Observer <u>20</u> | <u>21</u> | <u>22</u>                    | Last Quarter Moon <u>23</u> | <u>24</u> | <u>25</u> | <u>26</u> |
|                                                    |           |                              |                             |           |           |           |
| LVAAS Board of Governors Meeting <u>27</u>         | <u>28</u> |                              |                             |           |           |           |
|                                                    |           |                              |                             |           |           |           |

# 2022 LVAAS EVENT CALENDAR

Contributed by Bill Dahlenburg

| 2022 LVAAS Event Calendar |                      |                        |               |                              |                       |              |                       |                     |            |         |      |      |
|---------------------------|----------------------|------------------------|---------------|------------------------------|-----------------------|--------------|-----------------------|---------------------|------------|---------|------|------|
|                           | Sundays              |                        |               |                              | Saturday              | Saturday     | Mondays               | Multi-Day Weekends  | Moon Phase |         |      |      |
|                           | General Meeting time | Date/location          | Board meeting | Observer submission deadline | 7:00 PM Astro Imaging | Star Parties | Scouts at S. Mountain | Scouts at Pulpit R. | New        | First   | Full | Last |
| January                   | 3:00 PM              | 9<br>Muhlenberg/Zoom   | 30            | 23                           | no mtg                | no mtg       |                       | no camping          | 2          | 9       | 17   | 25   |
| February                  | 3:00 PM              | 6 *<br>Muhlenberg/Zoom | 27            | 20                           | no mtg                | no mtg       |                       | no camping          | 1          | 8       | 16   | 23   |
| March                     | 3:00 PM              | 13<br>Muhlenberg/Zoom  | 27            | 20                           | 26                    | 12           |                       |                     | 2          | 10      | 18   | 25   |
| April                     | 7:00 PM              | 10                     | 24            | 17                           | 23                    | 9            |                       |                     | 1<br>30    | 9       | 16   | 23   |
| May                       | 7:00 PM              | 1 *                    | 22 *          | 15                           | 21                    | 7            |                       |                     | 30         | 9       | 16   | 22   |
| June                      | 7:00 PM              | 12                     | 26            | 19                           | 25                    | 4            |                       |                     | 29         | 7       | 14   | 21   |
| July                      | 5:00 PM              | 9/10<br>Picnic – S.M.  | 31            | 24                           | 23                    | 2            |                       |                     | 28         | 7       | 13   | 20   |
| August                    | 7:00 PM              | 13/14<br>Pulpit        | 28            | 21                           | 20                    | 6            |                       |                     | 27         | 5       | 12   | 19   |
| September                 | 7:00 PM              | 11                     | 25            | 18                           | 17                    | 3            |                       |                     | 25         | 3       | 10   | 17   |
| October                   | 7:00 PM              | 9                      | 30            | 23                           | 15                    | 1            |                       |                     | 25         | 3       | 9    | 17   |
| November                  | 7:00 PM              | 13                     | 27            | 20                           | 19                    | 5            |                       |                     | 23         | 1<br>30 | 8    | 16   |
| December                  | **                   | 10/11                  | 18 *          | 11                           | 17                    | no mtg       |                       | no camping          | 23         | 30      | 8    | 16   |

\* early due to conflicts

July, Aug & Dec are Saturday meetings with rain date on Sunday  
 Jan, Feb & March general meetings Muhlenberg (tentative)  
 August meeting is at Pulpit Rock  
 December meeting / Holiday Party \*\*

NEAF  
 Cherry Springs S.P.  
 Stellafane  
 Black Forest S.P.  
 MegaMeet

April 9-10  
 June 2-5  
 July 28-31  
 May 27-29

## 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.

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