

The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

<https://lvaas.org/>

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

FEBRUARY 2022

Volume 62 Issue 02





ad astra *****

After receiving inquiries from other local astronomy clubs, the Board of Governors has approved allowing local clubs to attend Megameet, our no-frills get-together in May at Pulpit Rock.

Mike Waddell has decided to relinquish the position of Development. The position is now open, and we are looking for a volunteer.

Ron Kunkel and Frank Lyter hiked up to Pulpit Rock recently to check on the site after the recent weather and all is well. A tree took out the power for a time and Met Ed quickly restored power. Just prior to the snow all the rotted joists in the Kawecky Observatory were replaced and the basement was cleaned up by a group work party. Work will resume when we have access in the spring. The 17" Dobsonian Telescope was brought down off of the mountain to allow installation of a microcontroller and encoders for wireless connection to the Sky Safari application.

Looking forward to 2022, I would be remiss if I did not mention the upcoming astronomy event NEAF:

The Rockland Astronomy Club has notified us that they will again host the Northeast Astronomy Forum (NEAF) in person and registration has opened. NEAF is an annual gathering of more than 4,000 professionals, amateurs, and space and astronomy enthusiasts, all coming together to share interests and passions. NEAF is also a symposium for award winning talks, workshops, classes, and conferences and has over 120 vendors. NEAF will be held in Suffern, NY on April 9-10, 2022. Information can be seen at <https://www.neafexpo.com/>

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

Minutes from the LVAAS General Meeting – January 9, 2022

The January 2022 LVAAS General Meeting was conducted electronically using an on-line service. Approximately 30 people were in attendance. Director Tom Duff opened the meeting at 3:03 p.m.

At tonight's General Meeting the presenter was Paul Halpern, who spoke on "Flashes of Creation: George Gamow, Fred Hoyle, and the Great Big Bang Debate." (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.

Treasurer's Report: Blair Hogg

- Bills are getting paid, dues are being collected and deposited.
- Working on the end-of-year report.

Membership: Rich Hogg

- 2nd reading
 - Steve Vlasak
- 1st reading
 - Dustin Rego

General Comments:

- Suggestion to schedule a club bus trip to Holmdel, NJ to visit old Bell Labs.
- Discuss how to codify lifetime memberships with family memberships.
- The Astro-imaging group will begin having meetings starting in March.
- Future project for Pulpit Rock to include fitting one of the 12" Meade telescopes with a camera and making it available for remote online access.

Pulpit Rock Observatories – Frank Lyter

- 2 meetings this coming Friday (1/14) and Sunday (1/16), which will be recorded.
 - Meeting on loading the software and exercising the software for the Meteor Camera Project.
 - Meeting on mounting encoders on the Dobsonian telescope and connecting encoders with SkySafari.

Next General Meeting:

- In February, James Chen will be speaking on "My 50-Year-Old A. Jaegers Telescope Returns Home".
- In March, Felipe Maldonado from the DaVinci Science Center will likely speak on the Big Bang.
- 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 January General Meeting was recorded.

The meeting was adjourned at approximately 4:41 p.m.

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Submitted by Michael Huber, Secretary

LVAAS General Meeting: Online only
Sunday, February 6, 3:00 p.m.

"My 50-Year-Old A. Jaegers Telescope Returns Home" *presented by*
James Chen



Last year during the height of the pandemic, I was able to be re-united with my old high school telescope that I had sold in college. After 50 years, my A. Jaegers 3-1/4 f/15 refractor has come home. This will be an informal talk about its recovery and remembering the good old days of the 1950's and 1960's of building telescopes, and lusting after classic equipment made by Unitron, Cave, and others.

James Chen is retired from the Department of the Navy and Federal Aviation Administration where he worked as a Radar and Surveillance Systems Engineer. A guest lecturer at local Washington DC/Northern Virginia/Maryland astronomy clubs on amateur astronomy topics of eyepiece design and optical filters, he wrote a short Astronomy Magazine article on Dobsonian telescope design November 1989 and served as a sales consultant to two Washington DC area telescope stores for over 30 years. James is a frequent speaker at Astronomy clubs near his home in Virginia and has also spoken at Princeton on the topic of Astronomy for Older Eyes.

James has authored five books for Springer Publishing's The Patrick Moore Practical Astronomy Series including the titles:

[How to Find the Apollo Landing Sites](#)

[A Guide to Hubble Space Telescope Objects: Their Selection, Location, and Significance](#) ,

[The Vixen Star Book User Guide: How to Use the Star Book TEN and the Original Star Book](#)

[The NexStar Evolution and SkyPortal User's Guide](#)

[Astronomy for Older Eyes: A Guide for Aging Backyard Astronomers](#)

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



~ HELP WANTED: LVAAS STAR PARTIES ~

Our public star parties are scheduled to begin March 12 and volunteers are needed. No experience required and new members are encouraged to get involved. Here are a few ways you can help:

- Direct parking
- Monitor the planetarium entrance and control attendance
- Man one of our observatories
- Bring your own telescope for public viewing
- Help in the Red Shift selling drinks and food

Those with a little more experience may want to consider giving a short talk before the planetarium show or even present a planetarium show themselves. Choose your own topic for a talk or pick from the Night Sky Network material and demonstrations we have available. We will also provide instruction and assistance for those that would like to learn how to use the planetarium projector.

Manning LVAAS telescopes is easier than you might have thought. Our star parties are held close to the first quarter moon giving an easy target for not only the moon but bright planets and a few brighter Messier objects. Quite often the telescope is fixed on only one object through the night. We will train you on the telescope and experienced members will be available to assist first time volunteers.

Let's get back to normal! Please send an email to dahlen@epix.net and let me know should you have questions or if you are able to help.

Thank you!
Bill Dahlenburg



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.



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

Frank Lyter-Pulpit Rock Observatory Director - flyter@ptd.net

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 February, **James Chen** will be speaking on "My 50 Year Old A. Jaegers 'Scope Returns Home."

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."

In May, **John Conrad**, NASA Ambassador will speak. Topic not yet determined.

In June, **Gary DeLeo** will speak on "A Tale of Two Circles: from Orbits to Atoms."

Via Dave Raker: Library News

Dave has ordered a Great Courses DVD set titled "*The Big Bang and Beyond*" for our collection.

Via Tom Duff: Free Online Intro to Amateur Astronomy Series

The Kalamazoo Astronomical Society's five-part Introduction to Amateur Astronomy lecture series began on Saturday, January 15th at 1:00 pm EST. Schedule of topics here: <https://www.kasonline.org/amastro.html>

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>

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 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>

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: A Winter Moon Halo Imager: Mike Huber

"[This image] was taken on Thursday, 12/16 just before midnight. I happened to be walking our puppy at the time at home (Hatfield), looked up and saw this, so I had to snap a picture."

"A lunar halo (also known as a 22 degree halo) is a hazy ring that occurs at a radius of approximately 22 degrees around the moon. It is the result of the moon's light being refracted by ice crystals in Cirrus clouds in the upper troposphere at an altitude of approximately 6000 meters (20 000 feet)..."

<https://ownyourweather.com/what-causes-a-ring-around-the-moon/>

Get cooking...

In LVAAS style!



Start by shopping for your ingredients using our eco-friendly reusable shopping bag. Made of 100% recycled materials, 12" x 13". Spot clean with damp cloth. Only \$17.99



And when you start cooking, stay neat and clean with our own LVAAS apron. Choose our current logo (left) or our retro 1959 logo (below). 100% cotton twill, 31" long x 29" wide, two large pockets. Machine wash cold, tumble dry low. Only \$20.99



For this and many other items, visit our online LVAAS Redshift Store:

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



Night Sky Notebook
for
FEBRUARY
by
Peter Detterline

Night Sky Notebook

what you see when you look up



Peter
Detterline

From the Archives: The Porter Garden Telescope

by Sandy Mesics

Normally, I scan LVAAS documents to see what was going on 50 or 60 years ago, but February in 1962 and 1972 was a quiet time for the group, so I thought I would write about the Porter Garden Telescope.

Many of us are familiar with Russell W. Porter (1871-1949), the artist, arctic explorer, instrument designer and telescope maker. It can be said that the Springfield Telescope Makers and the Stellafane convention owe their existence to this talented individual. Indeed, Porter was responsible for the design of the 200-inch Hale telescope atop Palomar Mountain, for many years the largest telescope in the world. He collaborated with Albert Ingalls on the first edition of *Amateur Telescope Making*, released in 1926, and considered a classic to this day.

But how many of us have heard of the Porter Garden Telescope? How many of us have actually seen one? An article in the January-February 1962 edition of *Review of Popular Astronomy (RPA)* piqued my interest in this unique instrument.



Both decorative and utilitarian, the Porter Garden Telescope incorporated many new design features, one being the double-eyepiece arrangement shown above which allowed two observers to use instrument. Photos courtesy of Fred M. Garland, Valley View Observatory.

Left, garden scope with single eyepiece, courtesy of the Smithsonian. Right, scope with double eyepiece configuration, from *Review of Popular Astronomy*.

In a 1946 letter from Porter to Leo Scanlon, author of the 1962 RPA article, he said:

“About this time [1921] I made some drawings of a garden telescope, which the Governor [Hartness, of Vermont] happened to see. The result was that a large machine tool plant [Jones & Lamson Machine Co.] went into the business of telescope making. It was short lived. About a hundred were sold [prior to 1926], which evidently saturated the market. Although half a dozen were sold here in Southern California, I have been unable to locate them. There is one survivor; it is at Stellafane.”

The optics for the garden telescopes consisted of 6 inch f-4 plate glass mirrors, $\frac{3}{4}$ -inch thick. They were made by Wilbur Perry, one of the early Springfield telescope makers. They were ground, polished, and parabolized by machine, and hand corrected. Originally, they were silvered with a lacquer coating. Reportedly these coatings held up well, even after 40 years.

The telescopes were made from cast bronze and weighed about 70 pounds. They were designed to remain outdoors: There was a decorative cover for the primary mirror, and the secondary prisms and eyepieces stored in a box when not in use.



2. Porter at the eyepiece. Courtesy of Telescopes of Vermont.

Porter used a split-ring mounting for the garden telescope, similar to the mount used for the 200-inch Hale Telescope. John Pierce, a member of the Springfield Telescope Makers, suggested "that the 200-inch mount as constructed is simply a glorified 'Garden Telescope,' with a lattice tube instead of the bar which supports the prism and ocular in the garden telescope." In fact, evidence exists that the 200-inch was designed to mimic the garden telescope. Porter recalled that five years after the garden telescope was patented "... two Mt. Wilson astronomers showed up at Springfield looking for me. The report they took back to George Ellery Hale evidently was a favorable one, for Hale wired me to pack up and come to Pasadena and assist in building the 200-inch telescope."

The split ring mount of the garden telescope could be used in both alt-azimuth and equatorial mode. For alt-azimuth, the scope could be swung around its vertical axis consisting of a ball-bearing track at the base. By clamping the base, equatorial motion is produced by rotating the split ring equatorial head, which has a socket-type thrust bearing for the south polar axis and a circular track machined under the hour circle. This rested on two roller bearings, each of which has a handle to use as a slow motion in right ascension.

THE PORTER GARDEN TELESCOPE



*A Useful and Beautiful
Garden Ornament*



WHAT IS THE PORTER GARDEN TELESCOPE?



THE PORTER GARDEN TELESCOPE accomplishes what the common telescope has been unable to bring about. It is a powerful magnifier, that, once set up in the garden, becomes a permanent piece of garden furniture always ready for day or night use, requiring no care or shelter. It is there, like a minute man, when one hears the approaching aeroplane, instantly ready to pick it up and to follow its flight. From a safe and undisturbing distance one sees the joys and sorrows of our little animal friends otherwise invisible—the mother bird feeding her young, the sparrow fleeing from the hawk. What the phonograph and radio do for the ear, the Garden Telescope does for the eye—a continuous source of entertainment for the family and the family's friends. It is there, ever ready to entertain one's guests—whether it be the study of the heavens, or to see what Neighbor Jones is doing to his place across the valley.

And finally the Porter Garden Telescope is a beautiful garden ornament in solid statuary bronze. With its lustrous mirror and graceful design and its real

(5)

3. User guide. Courtesy of Telescopes of Vermont.

The instrument could be used in equatorial mode from 35° to 55° latitude. The scope came with instructions on how to align it on Polaris. Once aligned, the viewer could use the setting circles to zero in on objects not visible to the unaided eye. The right ascension hours were cast into the 11-inch diameter split ring in hours and ten-minute intervals. Declination marks were located on the spherical bowl supporting the primary mirror.

Another unique feature of the garden telescope is the configuration of the secondary and eyepiece. There were two configurations: in one, a right-angle prism sent the image to the eyepiece. In the other configuration, two smaller prisms sent the light to two eyepieces at opposite ends of a common arm: in that manner two observers could view an object simultaneously.

Four oculars were supplied with the telescope: two 25 mm Hastings eyepieces yielding 25X, designed to be used in the twin observer setup, and 12 mm (50X) and 6 mm (100X) eyepieces for higher powers. The eyepieces and prisms were manufactured by John Brashear, a noted optical firm in Pittsburgh.

The garden telescope was a work of art. The names of three notable astronomers, Kepler, Newton, and Galileo embellish the base of the telescope. A slender flat bar of overlapping leaves holds the primary

This close-up photograph shows detail of base, split-ring hour axis, and cover which protected instrument outdoors when not in use. Double-faced right-angle prism and twin oculars for "togetherness" observing may be seen in front of base, single eyepiece assembly at left.



mirror, the prism, and the eyepiece in alignment. A bowl of lotus leaves embraces the mirror, and a pair of cylindrical flowers forms the slow-motion controls.

Probably, fewer than 100 Garden Telescopes were ever made. There is no actual evidence of more than 50 telescopes being made. Many were melted down for the WWII war effort. This commercial failure can be partially attributed to cost. With a price tag ranging from \$400 to \$500, it was beyond the means of most potential buyers. It was also brought to market just prior to the stock market collapse of 1929, which may have affected sales.

If you want one, just get out to those yard sales and flea markets and hope for the best.

4. Courtesy of Review of Popular Astronomy

Alternatively, you can purchase an accurate reproduction from Telescopes of Vermont for a mere \$43,000.

References

https://en.wikipedia.org/wiki/The_Porter_Garden_Telescope

Scanlon, Leo J., The Porter Garden Telescope. Review of Popular Astronomy, Vol LVI No. 515, January-February 1962; pp. 22-25.

Smithsonian National Museum of American History

https://americanhistory.si.edu/collections/search/object/nmah_1184878

Telescopes of Vermont

<https://gardentelescopes.com/index.html>



StarWatch

All Jammed Up in Low Earth Orbit

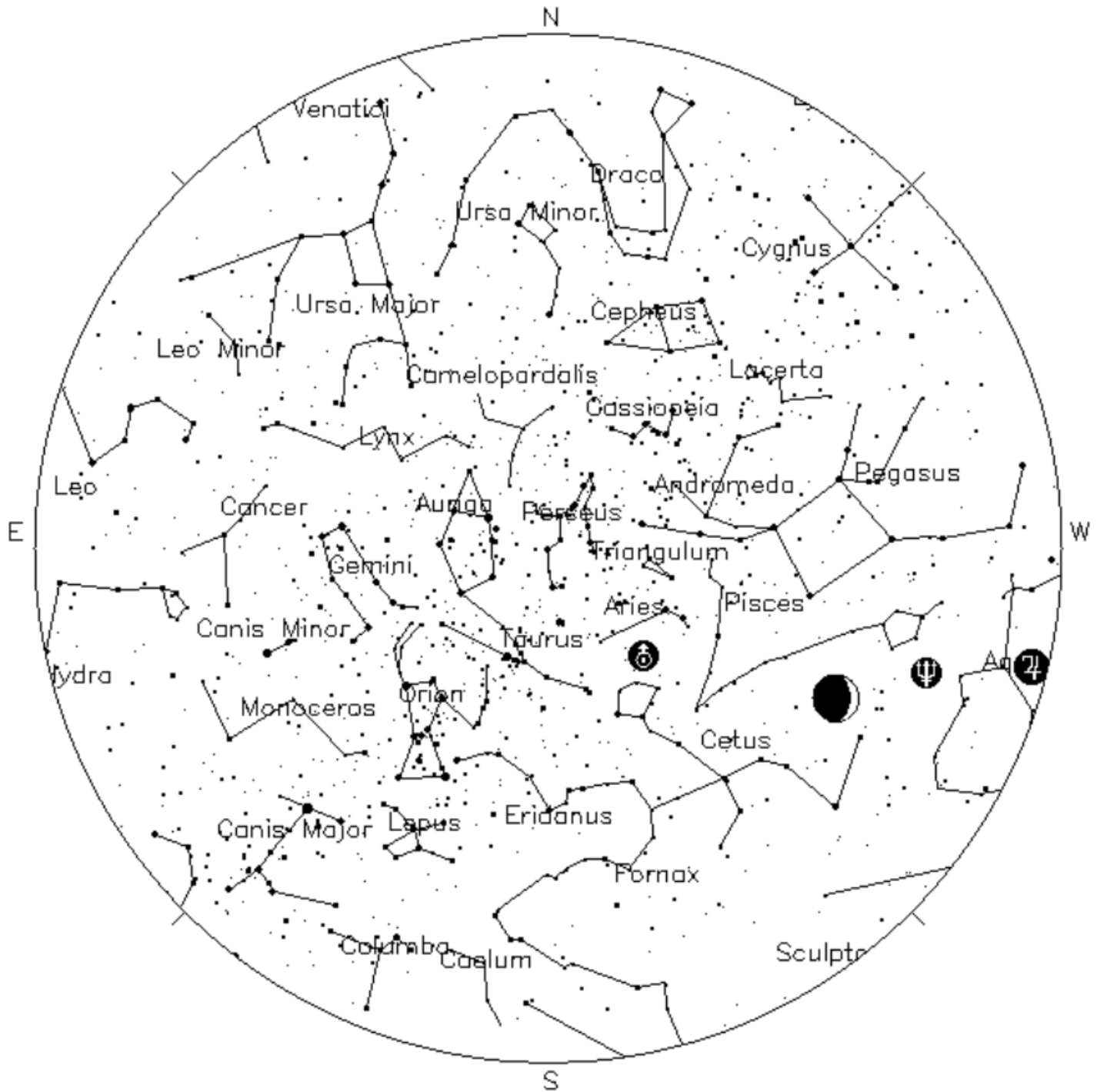
Back in August of 2019 when I was in Wyoming observing the Perseid Meteor Shower, I remember being annoyed by the light of a defunct satellite. Every 90 minutes or so, it would circle around, sporadically strobing the northern sky with flashes of reflected sunlight, sometimes rivaling the brightness of Venus in intensity. • There are currently about 6500 satellites and 1500 rocket boosters orbiting Earth, in addition to over 19,000 debris fragments which are 10 cm or larger in size. If that size is reduced to 1 cm (0.4 inch), an estimated one million more particles are circling Earth. All of these fragments are in Low Earth Orbit, 600 km or less in altitude (just under 375 miles). This is about 150 miles higher than the average orbital altitude of the International Space Station. There would be about 5000 less larger debris particles if the Chinese hadn't performed an anti-satellite test in 2007, and *Iridium 33* had not collided with *Cosmos 2251* in 2009. The right-angle collision of those two satellites was at a relative speed of 22,300 mph, a velocity where a silver dollar contains the same amount of energy as 1.5 sticks of TNT. Imagine what that would do to your Tesla. • Remember the Hollywood blockbuster, *Gravity*, starring Sandra Bullock and George Clooney, where a collision takes down most of the orbiting satellites, including the International Space Station? This is not the kind of end scenario that humanity would like to experience with a current investment in the space industry totaling four trillion-dollars. However, it may not be all fantasy either. •

Although the writers probably didn't know it, *Gravity* was based loosely on the Kessler Syndrome named after Donald J. Kessler, a retired senior scientist for orbital debris research at NASA's Johnson Space Center in Houston, Texas. Kessler concluded that the amount of space debris in orbit would eventually reach a critical tipping point, where through additional random collisions, more rubble would be generated than could be "cleansed" by the natural deorbiting of particles by the Earth's outer atmosphere. This would eventually lead to a cascading event that would be very bad for satellites, astronauts, and the space industry in general. • However, it is not all doom and gloom either. The military is currently monitoring about 1000 satellites to ensure their orbital safety, as well as many of those 10 cm (4 inches) or larger fragments. Rocket launches also take into consideration the probability of collision with other satellites and debris, and payloads can also be maneuvered to present as small a surface area as possible if onrushing rubble is expected to pass by. Conversely, they can be made to deorbit faster by presenting a larger surface area to the Earth's upper atmosphere. Still with the future prospect of an additional 100,000 communications satellites designed to establish global Internet coverage in line for approval as of November 2021, collisions in space seem a more likely reality, and a problem that needs close supervision by all space-faring nations. Ad Astra!

Gary A. Becker – beckerg@moravian.edu or garyabecker@gmail.com
Moravian University Astronomy - astronomy.org; also facebook.com/StarWatchAstro/

Forward this *StarWatch* to a friend by clicking [JOIN](#)

Sky Above 40°33'58"N 75°26'5"W Saturday February 5, 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/>

FEBRUARY 2022

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

MARCH 2022

		01	New Moon 02	03	04	05
06	07	08	09	First Quarter Moon 10	11	Star Party 12
General Meeting - 3:00 13 PM	14	15	16	17	Full Moon 18	19
Deadline for submissions to the Observer 20	21	22	23	24	Last Quarter Moon 25	Astro Imaging at SM 7pm 26
LVAAS Board of Governors Meeting 27	28	29	30	31		

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 Muhlenberg/Zoom	30	23	no mtg	no mtg		no camping	2	9	17	25
February	3:00 PM	6 * Muhlenberg/Zoom	27	20	no mtg	no mtg		no camping	1	8	16	23
March	3:00 PM	13 Muhlenberg/Zoom	27	20	26	12			2	10	18	25
April	7:00 PM	10	24	17	23	9			1 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 Picnic – S.M.	31	24	23	2			28	7	13	20
August	7:00 PM	13/14 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 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.

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, France 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 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.

Every effort will be made to properly credit the sources of the material used in this publication. If additional credit is required, please notify editorlvaas@gmail.com.

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Existing members please update your LVAAS profile information by emailing the membership director at membership@lvaas.org.

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