The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society
https://lvaas.org/
https://www.facebook.com/lvaas.astro
February 2025
Volume 65 Issue 02

Via Sandy Mesics, Programs Chairperson

Upcoming LVAAS General Meeting Speakers **(February and March meetings at Muhlenberg)**

In February, **Mike Huber** will do a live presentation on "Astronomy in 1913."
In March, **Grace Sweetak** from Lehigh University will speak live; Topic TBA
In April, **Franck Marchis** from Unistellar will speak via Zoom on Citizen Science Work.
In May, **Brian Kloppenborg** from the AAVSO will speak via Zoom on Citizen Science.
In August, **Brett Fadem** and **Jonathan Cuadra** are tentatively scheduled.
In September, **Joe Zitarelli** will speak on "The Expanding Universe."

- Please contact **astrosandy@gmail.com** if you have ideas for speakers, or would like to do a talk yourself.

Via Benjamin Long, LVAAS Director

LVAAS is in the process of re-keying the locks on our properties. To request your **free replacement keys**, please contact the "Key Coordinators" listed on our website's contacts page.

Via Earl Pursell, Key Coordinator

Anyone who has received a new HQA key (for the door into the South Mountain main building next to the oil tank): We recently installed new weather-stripping on this door, and it is a little tight when you try to lock or unlock it. You may have to lean on the door to compress the weather-stripping to turn the key. Hopefully, the weather-stripping will eventually compress and this will cease to be a problem. I'm sending this alert out to make everyone aware and to try to help everyone avoid breaking their key off in the lock.

KUDOS! THANK YOU, LVAAS VOLUNTEERS!

Pulpit Rock Maintenance Director **Ron Kunkel** would like to recognize LVAAS member **Jim B**. this month. Jim's presence up on the mountain is invaluable in keeping tabs on what goes on up there on nearly a daily basis. He has also volunteered in the past when we pressured washed the Schlegel-McHugh (Tinsley telescope) building, trying to remove the old paint. Your dedication in keeping LVAAS properties safe and secure is much appreciated, Jim! LVAAS thanks you! Kudos!

Via France Kopy, Editor

The Observer is always looking for new thoughts and ideas for improvement in 2025 and beyond. If you'd like write an article, now's the time! Have an idea for a new feature? Contact me to discuss it! Maybe you write sci-fi or do space art? Let's talk! Maybe you have your own ideas for something completely new and interesting. Let me know! **observer@lvass.org** If no response, please forward your email to **editorlvaas@gmail.com**

Via Earl Pursell, UACNJ Liason

Public Program Nights are in recess for winter at United Astronomy Clubs of New Jersey. UACNJ has its own YouTube channel and the schedule of videos is on its website. Please visit **uacnj.org** to watch and /or subscribe.

cover: **NGC 300 Caldwell 70, The Pinwheel Galaxy Imager: Dan Stern**

NGC 300 was captured by Dan in Rio Hurtado, Chile, over four days in November 2024. The image consists of 22 hours of LRGB. The equipment included a Planewave CDK-24/L-600 telescope/mount and a Moravian C5-100 camera.

This image was chosen by NASA for it's **Astronomy Picture of the Day (APOD**) on December 2, 2024. Check it out here **https://apod.nasa.gov/apod/ap241202.html** Congratulations, Dan!

LVAAS General Meeting Public Welcome

Sunday, Feb. 2 at 3 p.m. at Muhlenberg College

Trumbower Hall Room 130

"Universe in 1913:
Astronomy Through a Century-Old Lens"

Speaker is in person

presented by

Mike Huber

Mike will take us back to 1913 to explore the scientific understanding of astronomy as presented in a university textbook from that era. We'll delve into how astronomers of the time perceived the cosmos, from their theories about the structure of the Milky Way to their insights into celestial phenomena. This retrospective will highlight the foundational ideas and limitations of early 20th-century astronomy, showcasing how far we've come in just over a century.

Michael Huber is a former director and current member of the Lehigh Valley Amateur Astronomical Society since 2020. Mike discovered his passion for astrophotography in 2021. Some of his images of the universe have been recognized as "Top Picks" on AstroBin, and he has the incredible honor of having his photo of M13, the great globular cluster in Hercules, featured on the cover of this year's edition of *The Observer's Handbook*. Growing up with a father who was a professor of theoretical astrophysics, Mike developed a lifelong love of astronomy, which continues to inspire his exploration of the night sky and his contributions to the club.

The LVAAS 2025 Calendar will be available for sale at this event. Purchase price is $20.

Prospective new members who wish to attend the meeting please email membership@lvaas.org.

🌌 **Explore the Universe with the LVAAS 2025 Astronomy Calendar!** 🌌

✨ **A Year of Stunning Skies**
Our 2025 calendar features breathtaking astrophotography from local enthusiasts, highlighting the wonders of the cosmos.

✨ **Perfect for Stargazers**
Stay inspired all year long with beautiful images, key astronomical events, and important event dates like Mega-Meet, the Picnic, and our Holiday Party.

✨ **Support LVAAS**
Proceeds help fund public star parties, educational programs, and community outreach events. Your purchase supports our mission to share the night sky with everyone!

🗓️ **Get a Copy for Yourself, Friends, Family, and Coworkers!**
Purchase your calendar at the RedShift store or by sending an email to **m.huber614@gmail.com**

Pickup will be either at club events or South Mountain HQ.

Also available for purchase ($20) at LVAAS meetings

NEAF Ticket Sales are Open!

The excitement is building for the world's largest astronomy & space expo.

April 5-6, 2025

EXPERIENCE IT TO BELIEVE IT!

Get your tickets today!

https://www.neafexpo.com/

Rockland Community College
Suffern, NY

General Meeting Minutes - January 12, 2025

The January 2025 LVAAS general meeting was conducted electronically using an online service and in person at Muhlenberg College. Approximately 60 people were in attendance. Programs Chairperson Sandy Mesics opened the meeting at 3:05 p.m.

Our general meeting presentation was “SkyTools and Electronic-Assisted Astronomy” by Greg Crinklaw. The popularity of Electronically Assisted Astronomy (EAA) is growing rapidly, offering observers a way to combine the joys of live visual observing with the capabilities of modern cameras. Greg Crinklaw, developer of SkyTools, will introduce the audience to what makes SkyTools uniquely powerful for planning observations. He will also share how SkyTools is incorporating support for EAA, bringing the same innovative features to this field that it already provides for visual observing and long-exposure imaging.

Greg Crinklaw is an astronomer from Cloudcroft New Mexico, and is best known as the developer of the SkyTools observing software. Greg holds BS and MS degrees in astronomy and an MS in physics. He once worked for NASA as a software engineer in support of the Mars Orbiter Camera, which took thousands of pictures from Mar’s orbit for a decade. Greg considers himself to be a professionally trained lifelong amateur astronomer, who has managed to do just about every kind of astronomy at one time or another. After questions, the informational meeting started at approximately 4:00 p.m.

Membership: Rich Hogg

- The following members completed their second readings and are now full members:
  Tad Andrews
  Ben and Mandy Holland (*)
  Jeff Jernstrom

  (*) Ben Holland completed a first reading as an individual member, but asked to upgrade his status to a family membership and add his wife, Mandy.

- The following members completed their first readings:
  Flavio and Lori Da Silva (family membership) with Colton Da Silva

Sierra Kunigus
Edward O'Brien

- The following members have previously completed a first reading and are still eligible to complete a second reading to become full members:
  Doug Dietrich and Rachel Paul (family membership)
  David Follweiler

Astroimaging - Tom Duff:

- We have had the last meeting for the year and will resume meeting in April, 2025.

South Mountain Maintenance – Bill Dahlenburg

- We are always looking for help. We are usually here on Saturday mornings to assist with your telescopes or to give you a tour of our facilities. Please contact Bill to confirm that someone will be there before arriving.
- We have multiple telescopes and cameras for rent; please contact Mike Clark or Jamie Elovski.

Stargazers Group - Kyle Kramm

- We have had our last meeting for the year. Meetings will resume in April of 2025.
- Meetings are held on the second Friday of each month at South Mountain HQ starting at 7:00 p.m.
- There is no set agenda, and this is an excellent opportunity to get help with your equipment or to learn how to use the LVAAS observatories or rental equipment.

The January general meeting was recorded. Our next meeting will be February 2, 2025 at 3 p.m. at Muhlenberg College.

The meeting was adjourned at approximately 4:50 p.m by LVAAS Director, Benjamin Long.

Submitted by Beth Julius, Secretary

Peter Detterline's

Night Sky Notebook

February 2025

While you're here,
why not subscribe?

The Maksutov Club Circular

By Sandy Mesics

Fifty years ago, LVAAS embarked on a mission to rescue *The Maksutov Club Circular*. The Maksutov club originated in 1957 to help advanced telescope makers fabricate this new type of telescope. Professor Dimitri Maksutov had developed this new telescope design that promised a wide field of view but was much easier to produce than a Schmidt Cassegrain. Simply put, the optical design pairs a spherical primary mirror that has a central opening with a meniscus lens that has a silvered "spot" on the convex side facing the primary mirror. Think of Questar. In 1957 telescope makers from the Springfield Telescope Makers club began trying to build Maksutovs, but the corrector lens was a barrier. They were thick meniscus plates that either had to be extensively figured on both sides or cast in a meniscus shape to eliminate the excessive grinding required to make one.

Alan Mackintosh, a 48-year-old Scottish immigrant, optical technician, and amateur telescope maker living in Long Island stepped in to fill this void. He formed the Maksutov Club and found a source for the meniscus blanks. They were sold to the 69 members of the club. Simultaneously, he created the *Maksutov Club Circular*. It was published six times a year, and subscriptions were $5 per year. In 1967 Mackintosh moved to Indiana to become the observatory manager at Indiana University. Mackintosh kept the publication going until 1977, when he retired and moved to England. Mackintosh recalled, "Running the Circulars from England would have been very expensive and unsatisfactory so I arranged for them to be taken over by a leading club - this was not successful (probably they were not able to find a member who was willing to put the amount of work into the project) and I don't think that any numbers were published after I gave it up." Mackintosh's recollection was faulty: LVAAS member Gary Becker took over the publication and amalgamated it with *The Observer*.

At first the arrangement worked. Beginning in January 1978, the *Maksutov Circular* (number 196) was appended to *The Observer*. LVAAS members received it as part of their membership dues, and Maksutov Club subscribers paid a yearly fee to get the combined publication. Between 1978 and April 1981, the *Maksutov Circular* appeared monthly, having reached issue number 230). Then things started to ebb. A notice in the December 1981 *Observer* stated: "Yes, the Maksutov Club still exists. You haven't seen it lately because no one has submitted anything to share with their fellow members." Again, in February 1982, "We almost have a Maksutov Article. … Only one problem, it's in French."

Page Two
January, 1978

. . . . . THE MAKSUTOV CLUB . . . . . .
Circular Number 196

A SHORT HISTORY OF THE MAKSUTOV CLUB
Allan Mackintosh

In April 1982 the *Observer* published a list of 87 *Maksutov Circular* subscribers and urged them to renew their subscriptions. The price was $4 for subscribers in the U.S., $6, for subscribers in Canada

and Mexico, and $10 for other foreign subscribers. However, by June 1882 membership had dropped to 18 members, and according to the *Observer*, "Ex-subscriber Art Leonard of Davis, California writes that he feels that Bob Cox and Richard Berry, in *Telescope Making* [Magazine] have now taken over the service which Mac has given for so many years."

The circular remained in limbo throughout 1983. In August the *Observer* reported that "Two articles have been received for the Maksutov Club. … Neither of these articles appeared in this issue because of the lead time needed to get the graphics reproduced." The next month, Maksutov Club member Karl-Ludiwig Bath wrote from West Germany appealing to members to write articles. The last mention of the *Maksutov Club Circular* was in the April 1983 Observer, "We had only a couple of Maksutov articles included in the Observer, but we printed everything we got." 33 members were listed.

LVAAS members of the club included Ed Gilmore and Ralph Schlegel. Courtesy Stellafane website.

The publication was a victim of the general decline of amateur telescope making, publications such as *Amateur Telescope Making Magazine*, and ultimately the internet, where ideas could be shared instantaneously. Additionally, manufacturers like Meade and Celestron mass-produced affordable commercially made Maksutov telescopes.

References

Willard, Bert. Mac's Mak Club. Stellafane History. **https://stellafane.org/history/early/willard/mak.html**

The Observer, various issues 1978 to 1983.

From the Library – *Joe Zitarelli*

In the summer and early fall I participated in a Zoom course on astronomy entitled "Adventures in Astronomy: Approaching Infinity." I watched it along with other LVAAS members to see if it was something worth viewing. It is an interactive first course in astronomy with a target audience of high school science teachers to be better prepared to teach the subject. The course also targets high school students with an interest in the subject who do not have an available astronomy course at their school. The course is not taught by PhD astrophysicists, rather by an amateur astronomer with an interest in teaching the subject. The course is quite appropriate for adults with an interest in learning more about a wide range of topics in astronomy. The course is held weekly on Tuesday nights at 7:30 p.m. They usually start with a brief review and any questions from the previous week, then spend about an hour on that evening's topic, and finally end with a question-and-answer period. It is given over Zoom, and all participants are welcome and encouraged to ask questions. The cost of the course is $100 and you can attend as many or as few sessions as you like. The slides for each lesson are provided beforehand and a video is posted a few days after each session. The schedule for the next session is:

Class number	Date	Topics
1	1/14/25	Intro, Geo-centrism, Kepler's laws, the Kepler-Newton law, the scientific method
2	1/21/25	Eclipses, tides, solar system formation, planet tilts & density
3	1/28/25	Rocky & giant planets, moon, escape velocity, planet atmospheres, the greenhouse effect
4	2/4/25	Determining Earth's age, comets, asteroids, distances using parallax
5	2/11/25	Distances using cepheid variable stars; M31 is a galaxy!, sun, fusion, the Hertzsprung-Russel diagram
6	2/18/25	Identifying atoms in stars; star characteristics, luminosity, element creation & supernovae
7	2/25/25	Neutron stars, black holes, pulsars, professional telescopes, building the Extra Large Telescope (39 meters)
8	3/4/25	Radio & space telescopes; Observing the sky: stars, moving groups, Mars, the moons of Saturn & Jupiter
9	3/11/25	Galaxy classification, active galactic nuclei, blackbody & synchrotron radiation, the cosmologic redshift
10	3/18/25	The Hubble-Lemaitre law, dark matter, the cosmologic principle, special relativity
11	3/25/25	General Relativity & its proofs, gravitational waves, the cosmic microwave background radiation
12	4/1/25	Women astronomers, Universe age, size, early years & expansion. Does it have an edge? The Big Bang
13	4/8/25	Fate & density of the U; proportions of normal, dark, and energetic matter; inflation; the 4 forces of nature.
14	4/15/25	Habitable exoplanets, astrobiology, the lifetime of K type stars. Are ETs out there?
15	4/22/25	Are ETs on Earth? #1
16	4/29/25	Are ETs on Earth? #2
17	5/6/25	Highlights of the course & informal discussion

While I don't feel the course is perfect, I don't know of any other comprehensive, interactive courses on Astronomy at this price point. For more information or to sign up go to https://www.astronomyteacher.net/

Books, Books, Books

We have been approached by Princton University Press and offered a 30% discount as members of LVAAS for any of their books on Astronomy. For starters they recommended the following:

- Hidden in the Heavens: How the Kepler Mission's Quest for New Planets Changed How We View Our Own (2024) : click **here**
- The Sky Is for Everyone: Women Astronomers in Their Own Words (2023) : click **here**
- Back to the Moon: The Next Giant Leap for Humankind (2022) : click **here**
- A Traveler's Guide to the Stars (2024) : click **here**
- The Little Book of Exoplanets (2023) : click **here**
- Stars and Planets: The Most Complete Guide to the Stars, Planets, Galaxies, and Solar System – Updated and Expanded Edition (Princeton Field Guides series, 2017) : click **here**
- Welcome to the Universe in 3D: A Visual Tour (2022) : click **here**

If you are interested in purchasing any of these or other Astronomy books contact me at library@lvaas.org and I will send you the discount code. Or if you would like me to consider purchasing any of these titles for the library, let me know.

StarWatch

Moon Among the Planets: Part Two

For the past few weeks, I've been writing about the planetary alignment spread over more than a third of the heavens in the early evening sky. The waxing crescent moon made its debut into the evening sky early last week, adding to the celestial beauty as it traveled among Saturn, Venus, and Neptune. This week, the moon's journey continues as it transitions into its gibbous phase, more than half lit, leading up to the full moon on Wednesday, February 12.

Sunday, February 2: The nearly 25 percent waxing crescent moon has now moved high above Venus, Neptune, and Saturn and can be viewed in a completely dark sky around 7 p.m. If the air is transparent, binoculars should quickly reveal earthshine along with the unaided eye if averted vision is used. Faint objects are more easily seen if the eye's rods are engaged in trying to make the observation. Requiring more light to trigger the receptors, the central vision composed mostly of cones is designed for color and clarity of vision. The rods mostly positioned away from the cones require less light for activation allowing them to discern much fainter targets. They are also not adapted for color.

Wednesday, February 5, 8 p.m.: During the past two days, the moon has journeyed across the constellations of Pisces the Fish and Aries the Ram. This evening, it is crossing into the constellation of Taurus the Bull. The moon has transitioned from a crescent into a waxing gibbous phase, meaning that more than 50 percent of the surface that faces Earth will be sunlit. The moon is positioned just under four degrees from the star cluster of the Pleiades (Seven Sisters), a nice view through binoculars, and 5.5 degrees above the planet Uranus. Keeping the moon at the top end of your binoculars, two stars close together and at nearly the same brightness should be visible close to the upper middle of the field of view. Center those stars in your binoculars, and below will be a single star like object about the same brightness. That will be the planet Uranus. By midnight, the moon will have moved within three degrees of the Pleiades and will, unfortunately for us, begin to occult or pass in front the star cluster just after local moonset. The West Coast, Alaska, and especially Hawaii are in better locations to watch some of the Pleiades hiding behind the passing moon.

Thursday, February 6: This evening, the nearly 70 percent sunlit moon stands six degrees above the mightiest planet in the procession, Jupiter, best seen with just the unaided eye. Use binoculars to move from the moon to Jupiter and then continue in the same direction to spot yellowish Aldebaran, the Alpha Star of Taurus the Bull.

Sunday, February 9: An hour after sundown, check on the 93 percent sunlit moon because it will be just under three degrees from Mars. You should be able to see the pair with the unaided eye. You can also block the moon with several fingers. Near and above the moon will be the heads of the Gemini Twins, Castor and Pollux. Pollux will be closest to the moon. Earlier in the day, at about 1:15 p.m., the moon occults the planet Mars. Again, we miss this rare event because Mars does not rise until 2:20 p.m. after the occultation has concluded, and the moon is about one degree from the Red Planet.

Wednesday, February 12: The moon is full tonight and rises next to Regulus, the brightest star of Leo the Lion. By 8 p.m., the pair is 25 degrees above the eastern horizon and separated by just under two degrees. Regulus is to the right of the moon. Binoculars will be needed because of the extreme difference in brightness between the pair. * Again, I wish everyone success in observing the moon gliding through the procession of planets and past several bright stars. It is a great way to get to know the heavens. A photo of the February 1 moon, Venus, Neptune conjunction is here. Ad Astra!

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Moravian University Astronomy - astronomy.org

it's

2025

Don't forget to Renew your LVAAS Membership!

LVAAS PayPal link: https://www.paypal.com/donate/?hosted_button_id=FBP8Y5VX5QXNW

(remember to add a note with your name, and membership type)

If your information has changed:

Online information update form: https://form.jotform.com/233314308714147

Printable form:
https://lvaas.org/filemgmt_data/files/LVAAS_Membership_Renewal_Form.pdf

Complete instructions: https://lvaas.org/page.php?page=Renewing

Questions? email membership@lvaas.org

New members who joined after October 1st are paid up for the following year.
Regular: $45
Family: $65
Junior/Student: $15
Sustaining: $90

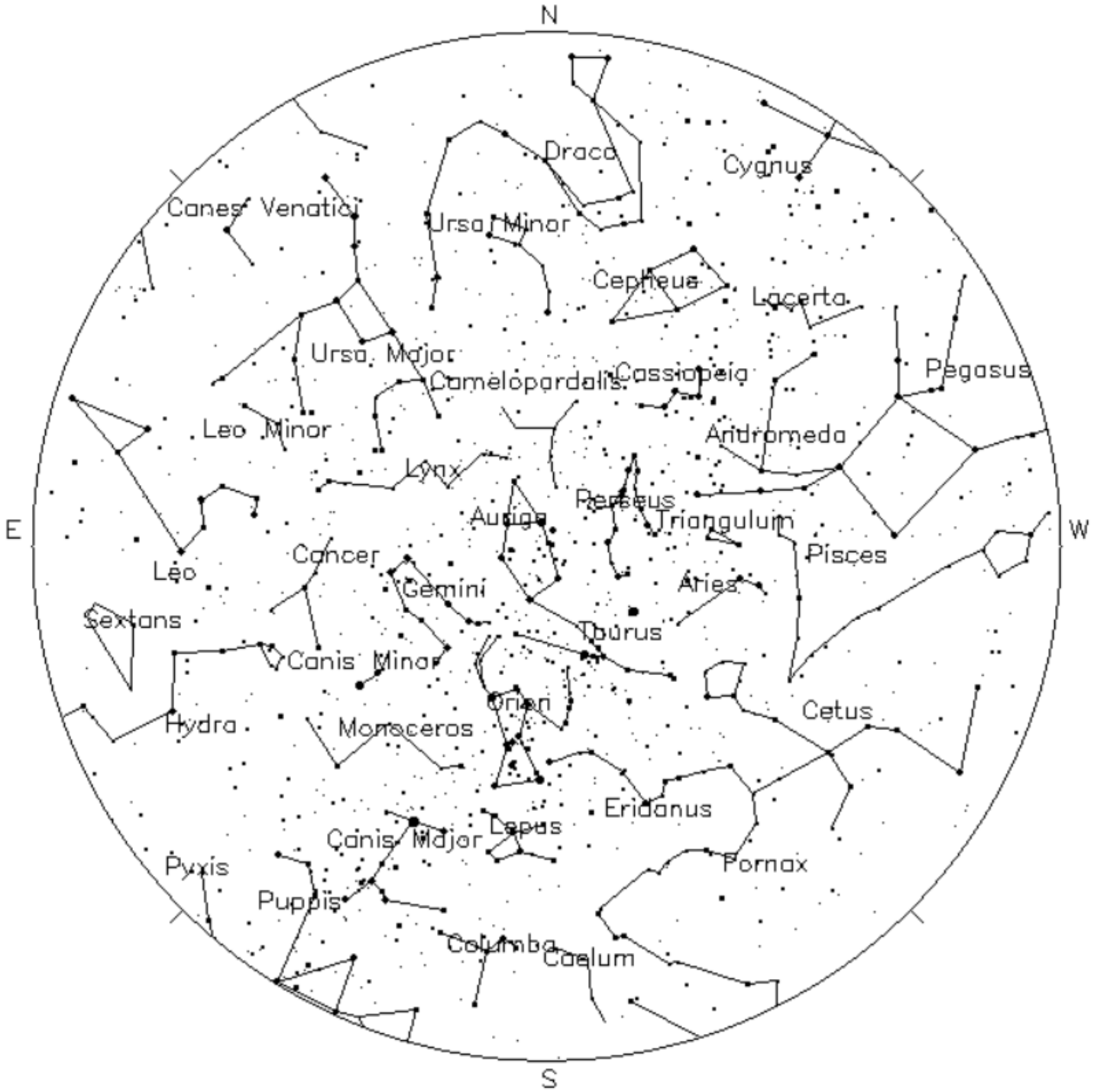
FEBRUARY 2025

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						01 Winter Star Party
02 Winter Star Party Groundhog Day General Meeting 3:00 PM Muhlenberg College	03	04	05 First Quarter Moon	06	07	08
09	10	11	12 Lincoln's Birthday Full Moon	13	14 Valentine's Day	15
16 Deadline for submissions to the Observer	17 President's Day	18	19	20 Last Quarter Moon	21	22 Washington's Birthday
23 LVAAS Board of Governors Meeting	24	25	26	27	28	

MARCH 2025

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						01
02	03	04 Marti Gras	05	06 First Quarter Moon	07	08 Star Party
09 Daylight Savings Begins General Meeting 3:00 PM Muhlenberg College	10	11	12	13	14 Full Moon Stargazers Group Meeting	15
16	17	18	19	20 Spring Equinox	21	22 Last Quarter Moon
23 Deadline for submissions to the Observer	24	25	26	27	28	29
30 LVAAS Board of Governors Meeting	31					

Sky Above 40°33'58"N 75°26'5"W Saturday Feb 01 2025 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

Customize *Your Sky at* http://www.fourmilab.ch/yoursky/

2025 LVAAS EVENT CALENDAR

Contributed by Bill Dahlenburg

2025 LVAAS Event Calendar											
	Sundays				Saturday			Moon Phase			
	General Meeting time/date	location	Board meeting	Astro-Imaging	Star Parties	Stargazers Group	Observer Submission Deadline	New	1st	Full	3rd
January	3:00 PM 12	Muhlenberg	26	no meeting	no meeting	no meeting	19	29	6	13	21
February	3:00 PM 2	Muhlenberg	23	no meeting	no meeting	no meeting	16	28	5	12	20
March	3:00 PM 9	Muhlenberg	30	no meeting	8	14	23	29	6	14	22
April	7:00 PM 13	S.M.	27	26	5	11	20	27	5	13	20
May	7:00 PM 4	S.M.	25	17	3	9	18	27	4	12	20
June	7:00 PM 8	S.M.	29	14	7	13	22	25	3	11	18
July	5:00 PM 12 (13)	S.M.	27	19	5	11	20	24	2	10	17
August	7:00 PM 9 (10)	Pulpit	31	16	2	8	24	23	1 31	9	16
September	7:00 PM 14	S.M.	28	13	27	12	21	21	29	7	14
October	7:00 PM 12	S.M.	26	11	25	10	19	21	29	7	13
November	7:00 PM 9	S.M.	30	15	29	14	23	20	28	5	12
December	2:00 PM 14	?	28	13	no meeting	no meeting	21	20	27	4	12

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

NEAF	4/5 – 4/6
Mega Meet	6/26-6/29
CSSP	6/19 – 6/22
Stellafane	7/24 – 7/27
BFSP	

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 400 pixels/inch max.
- Use the lowest JPEG quality that still looks good!
- Shoot for 400kb for a 1/2 page image or 1MB 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://imageresizer.com/resize/download/6779bd945d63ac1a3032f37d

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 **observer@lvaas.org.**

Astroimaging Director, Tom Duff is our new Astroimaging editor, and welcomes all image submissions.

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. Early submissions are greatly appreciated. PDF format is preferred. 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 the editor.

If you are interested in becoming a member of LVAAS, please visit our **membership page** for information on applying. Existing members please update your LVAAS profile information by emailing the membership director at **membership@lvaas.org** .