

# The Observer

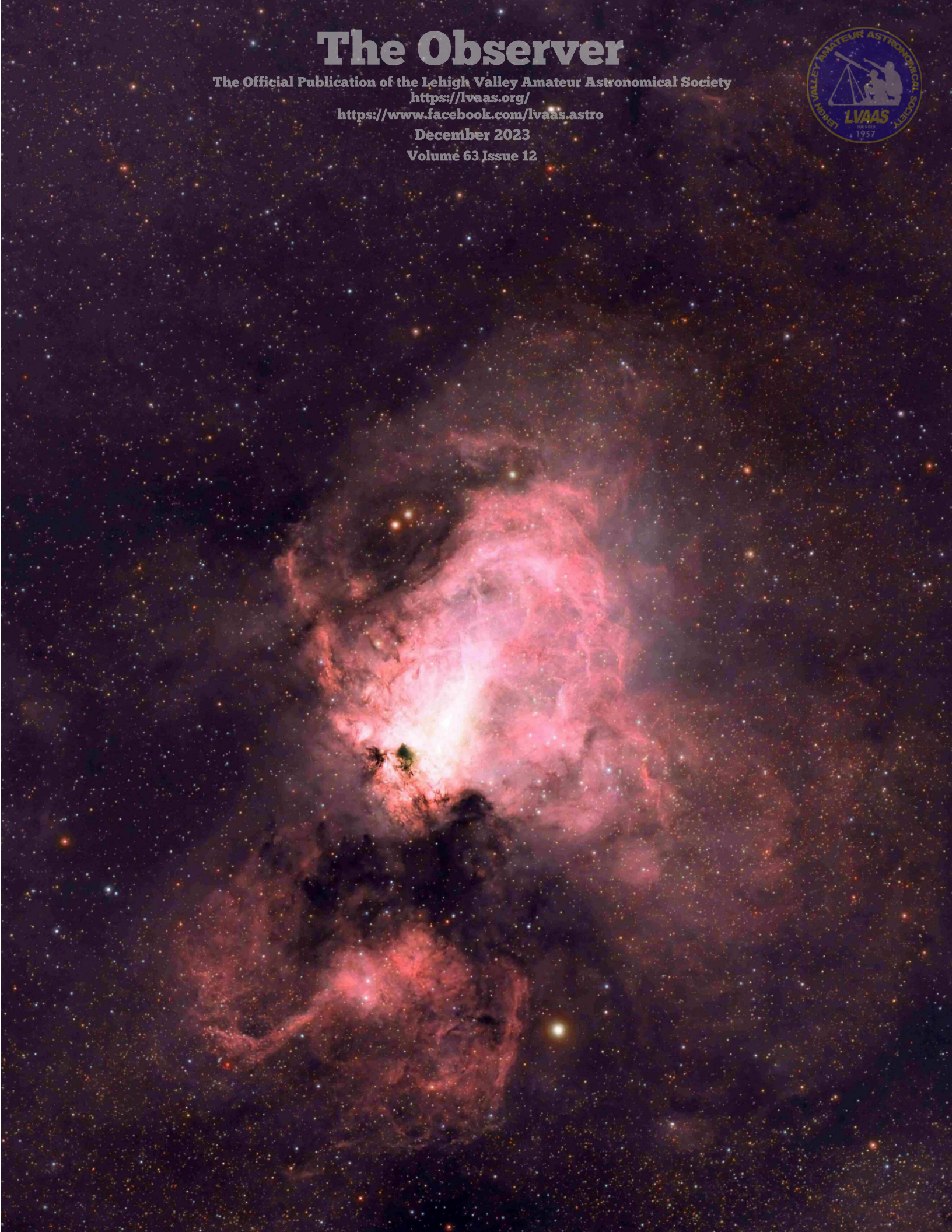
The Official Publication of the Lehigh Valley Amateur Astronomical Society

<https://lvaas.org/>

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

December 2023

Volume 63 Issue 12





I want to firstly thank everyone very much that helped out at our last star party for 2023. It was very successful. So thank you to everyone who helped with parking, seating, running scopes, showing off your equipment, answering questions, guiding our guests, and everything else! A big shoutout to Earl Pursell and Linda Prince who gave the planetarium shows. We had over 200 people in attendance in just the planetarium shows alone!

A quick update from the BOG: Security cameras for South Mountain are on order.

This is my final Ad Astra before handing the reins over to our new director, Benjamin Long. This year we hit a record high in membership with over 430 members, added several telescopes and a brand new Seestar S50 to our collection, ended the year on a surplus, and overall accomplished a great deal. We have had many excellent events including our star parties, Mega Meet, our picnic, and Science Under the Stars at Da Vinci. Many times we had significant challenges that had to be overcome, but our excellent leaders and members, the lifeblood of our club, rose to the challenge each and every time. It's all of you who make this club the shining star within our community that it is. I sincerely thank you all.

This past year that I have had the pleasure of serving as Director has been one of the most enriching and enlightening years of my life. I have learned and grown much. When I first stepped into this role, I was filled with a mix of excitement and trepidation, eager to contribute to a community united by our shared fascination with the cosmos. Our journey together has been nothing short of stellar.

On Saturday 12/9, I will host my final General Meeting before handing the reins over to our new director. As I do, I have every confidence that under Ben's leadership the club will reach new heights. I encourage each one of you to continue your support and to keep the flame of curiosity and wonder burning bright.

In the words of Carl Sagan, "Somewhere, something incredible is waiting to be known." May you all continue to seek, discover, and be amazed by the incredible mysteries of our universe.

Thank you for the memories, the learning, and the shared nights under the stars. Though I am stepping down as director, my journey with this club and my love for astronomy will forever remain a fundamental part of who I am. Clear skies and happy stargazing to you all!

Ad Astra!

Mike Huber

## Minutes from the LVAAS General Meeting – November 12, 2023

The November 2023 LVAAS General Meeting was conducted electronically using an on-line service and at our South Mountain headquarters. Approximately 50 people were in attendance.

Director Michael Huber opened the meeting at 2:05 p.m.

Tonight's General Meeting's presentation was "Capturing Star Trails with your Smartphone" and was given by Nico Carver. Nico has always been a camera nut. After graduating college with a degree in filmmaking, he traveled around the world and first fell in love with photographing the night sky while shooting aurora in Iceland. He now works full-time in astrophotography education, and runs a successful YouTube channel entitled *Nebula Photos* that aims to help beginners get started with astrophotography. Nico discovered the Hummingbird Nebula, a blue nebula, while reprocessing 2019 data.

Images of star trails are an excellent stimulus for tons of great astronomical questions: Why do the trails arc around Polaris? Why are they different colors? Why can't we see star color with our eyes? Can we tell time with the stars? With care, capturing star trails can also result in a beautiful image worthy of printing! In this workshop, participants will learn everything they need to know to use their own smartphones to capture beautiful images of star trails. To get the most out of this workshop, participants should have access to an iPhone or Android phone and purchase/install the following apps: <https://tinyurl.com/StarTrailsApps>

Star Trails are not due to the stars moving, but are due to the rotation of the earth about the celestial pole. Polaris (The North Star) is near the North Celestial Pole. The further stars are from the celestial pole, the faster they appear to move. To create star trails on smartphones you will need multiple apps. To capture images on Android phone you will need Intervalometer for Timelapse, and for iOS you will need NightCap Camera. For stacking you will need Star Trail (free), Star Stacker (\$3.99), Stellarium Mobile or Sky Google. You will also need editing software. The only equipment needed besides the phone are a tripod and a bracket to attach your smartphone to the tripod.

Nico then gave a demonstration on how it is done. You can learn to do it yourself by following the instructions in his slide show that is available at: [StarTrailsLVAAS.pdf](#)

Nico suggested that this could be done at star parties to lead to discussions on the different colors of stars, and how to tell time from the stars, as the star trails appear straighter the farther east or west that you go. He also suggested you can create interesting pictures by choosing different foregrounds or with different phases of the moon, or by adding a brief light to the foreground by a process that is called 'light painting.' He also pointed out that a longer exposure time leads to more color.

A break was taken at 3:05 p.m. to allow members to purchase UACNJ calendars, and check out our various observatories and our library.

The Business Meeting commenced at 3:20 p.m.

The Director presented the proposed LVAAS 2024 Budget as approved by the Board of Governors for membership approval. Highlights of the proposed budget include:

- Saving in the Society's insurance will be used to pay for security cameras at Society properties.
- There is an increase in the South Mountain Equipment budget for the purchase of rental telescopes including a ZWO SeeStar 500 for use by full members.
- An increase in the Computer and Technology Budget
- An increase in the Membership budget to cover increased payments to PayPal as more members pay with this service.

The proposed budget, as in recent years, is a deficit budget of \$10,130. However, at the end of the year a surplus, or at least a lower deficit, is expected.

A motion was made by Director Mike Huber, with a second by Assistant Director-elect Kyle Kramm, to accept the proposed budget. The motion was passed by a hand vote of the members present.

A motion was made by Rich Hogg, with a second by Fred Moskowitz, to close the Business Meeting.

#### General Comments and Announcements:

- Our next Star Party is Saturday November 18. We expect a large turnout as multiple groups have contacted us and asked for Planetarium shows. We are currently looking at having Planetarium shows at 5, 6, 7 and 8 p.m. to accommodate all interested parties. We could use the help of anyone who is available due to the high expected turn out.
- The Stargazer's Group is not meeting during the winter months. Their next meeting will be on Friday March 8, 2024 at South Mountain.
- The Astroimagers Group has one more meeting this year on Saturday December 16 at 7 p.m. at South Mountain.
- We still have multiple open positions to fill:
  - **Member Services** to run the Red Shift Store to sell merchandise and run the snack shop.
  - **Star Party Coordinator**
  - Dave Raker has been running the Library since 1999 and will soon be moving. LVAAS is looking for someone to take over the role of leading the **Library Committee**.

#### Membership: Rich Hogg

- The following members completed their second readings and are now full members:  
Bill and Ruth Lodder (family membership)  
(Note: the Lodders were inadvertently admitted from last month's report as members who were eligible to have a second reading.)

- The following members completed their first readings:  
Jonathan Adams  
Aidan Berger  
Dennis Hendershot  
Bert and Kathy Pochek (family membership)  
Louis Velez
- Currently, no members have previously completed a first reading and are still eligible to complete a second reading to become full members.

#### South Mountain Maintenance – Bill Dahlenburg

- There is usually LVAAS property maintenance being done on Saturday mornings from 9 a.m. until noon. Members are invited to get trained on the telescopes, rent telescopes, and if the skies are clear to view the sun through solar telescopes with white light and Ha filters. If you plan to go to South Mountain you should email Bill before going, to confirm they will be there on that specific Saturday.

#### Pulpit Rock Observatories – Frank Lyter

- We have started to use the Society's color camera, an SBIG 2000, and spectrograph, an SBIG SSM 7. Frank presented a .pdf image with some results. Anyone interested in being involved in using this equipment should contact Frank.

#### Next General Meeting:

- Our next general meeting will be our annual Christmas Party on Saturday December 9 at the Da Vinci Science Center in Allentown, PA.

The party will take place from 11 a.m. to 5 p.m.

- Set up can begin at 11 a.m.
- Lunch at 1 p.m.
- The presentation at 2 p.m.
- Business Meeting at 3 p.m.

The November 2023 General Meeting was recorded. The meeting was adjourned at approximately 4:00 p.m.

Submitted by Joe Zitarelli, Secretary



# 2024

*Is coming! Happy New Year!*

**It's time to renew your LVAAS membership**

LVAAS PayPal link: [https://www.paypal.com/donate/?hosted\\_button\\_id=FBP8Y5VX5QXNW](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](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](mailto:membership@lvaas.org)

**Renewals are due by March 1.**

New members who joined after October 1st are paid up for 2024.

Regular: \$45

Family: \$65

Junior/Student: \$15

Sustaining: \$90



## Via Sandy Mesics, Programs Chairperson

### Upcoming LVAAS General Meeting Speakers

**December: (Holiday Party)** LVAAS member Linda Prince will speak in-person on "City of Stars."

**January:** Mario Motta will speak on "Light Pollution" via Zoom.

**February:** Paul Halpern will speak on his new book "The Allure of the Multiverse" and do a book signing.

**March:** Dave Sobel (tentative) will speak via Zoom; topic TBA.

\* Please contact [astrosandy@gmail.com](mailto:astrosandy@gmail.com) if you have ideas for speakers, or would like to volunteer yourself!

## Via Dave Raker, Society Librarian

### New Books

An Introduction to Modern Astrophysics - Bradley Carroll

The Skywatcher's Handbook - Colin Ronan

Flight: My Life in Mission Control - Chris Kraft

Skylab: America's Space Station - David Shayler

The Rocket Men - Rex Hall

Russia in Space - Brian Harvey

Jupiter Odyssey (Galileo) - David Harland

The Astronomy and Astrophysics Encyclopedia - Stephen Maran

The World Book of Space Travel - Robert Zeleny

An Introduction to Cosmochemistry - Charles Cowley

Venus: The Geological Story - Peter Cattermole

The Backyard Astronomer's Guide - Terence Dickinson

Worlds Apart: A Textbook in Planetary Sciences - G. Consolmagno

### New DVDs

OSIRIS-REx Mission by John Conrad  
Photographing Star Trails with a Smart Phone by Nico Carver

Dave is working on storing the library's collection of video talks, excel files, etc. and it will be left in the library desk once completed.

*The Observer* wishes Dave the very best as he 'turns the page' on his long history with LVAAS. He has been steadfast during his tenure as our Librarian, and a shining example of volunteerism. Godspeed, Dave! - ed.

## Via France Kopy, Observer Editor

All LVAAS members are welcome and encouraged to contribute material for our newsletter, including photos (astroimages, skyscape or event), original articles of astronomical interest, or advertisements for equipment.

*The Observer* has a world-wide audience; why not use it to share your love of astronomy? (Please see the black box, last page for specifics on ads.)

## Via Earl Pursell, UACNJ Liason

**NASA Summer Internship Opportunities, Application deadline Feb 2, 2024**

<https://www.nasa.gov/learning-resources/internship-programs/>

## Via Earl Pursell, UACNJ Liason

During the off-season (November through March) UACNJ is now presenting an online astronomy-related presentation that begins at 8 p.m. on Saturdays. You can tune in by visiting us at our [YouTube channel](#). To view the program line-up please visit [uacnj.org](http://uacnj.org).

**Cover Image: M17 The Omega or Swan Nebula in Sagittarius Imager: Paul Tracy**

**Image Info:M17**

*(also thanks to Paul for submitting the digital art later in this issue)*

Target: M17 Omega or Swan Nebula

R: 12x300sec

Acquisition Date: July 24, 2023

G: 12x300sec

Location: Backyard in Schnecksville

B: 12x300sec

Takahashi FSQ106 f/5 refractor

L: 12x300sec with Triad Ultra Quad NB filter

Paramount MyT Mount

Processed in PixInsight with BlurXterminator and

ASI2600MM mono cooled camera

NoiseXterminator



# LVAAS General Meeting

## Saturday, December 9 *(see full schedule below)*

Da Vinci Science Center & via Zoom

### "City of Stars"

*presented by*

**Linda Prince**



#### **Schedule of events (Saturday, December 9)**

10:00 - Da Vinci Science Center opens

11:00 - 12:00 - Drop off food items in classrooms 1 and 2

12:00 - 2:00 - Enjoy our holiday meal in Classrooms 1 and 2

2:00 - 4:00 - Presentations and Society activities in Classroom 3

-- Presentation "City of Stars" by Linda Prince

-- Presentation by Claudio Stabile, Jr.

-- Recognition of new members

-- Induction of 2024 Officers

-- Other announcements

4:00 - 5:00 - Clean up and depart

5:00 - Da Vinci Science Center closes

Taking an astronomy course at a local community college about 30 years ago inspired Linda to buy a telescope, which showed her magnificent views of the Moon and Saturn. However, after struggling and failing to see many objects that were shown on sky maps from her home on Long Island, NY, she joined an astronomy club for help. That was the beginning of friendships with others in the hobby as well as involvement in public outreach. Now living here in the Lehigh Valley, Linda is thrilled to have found LVAAS, a welcoming club with dedicated members and great resources.

**This meeting will also be our annual Holiday Party, and will be held at the Da Vinci Science Center in Allentown.** Members will be admitted to the center at no charge, and will be free to explore the exhibits. [Click here for driving directions.](#) We will be using the three upstairs classrooms for our activities.

Come share a pot-luck meal! LVAAS will provide beverages, plates and bowls, utensils, and napkins. Please bring a food item or dessert to share!

**Prospective new members who wish to attend the meeting should email [membership@lvaas.org](mailto:membership@lvaas.org).**





*Peter Detterline's*  
**Night Sky Notebook**  
DECEMBER 2023



**Night Sky Notebook**  
what you see when you look up

Peter  
Detterline

# LVAAS Global Meteor Network Update

Congratulations to **Steve Walters** for the successful installation of his home meteor camera in Albrightsville, PA. Steve's station has been successfully calibrated and is now part of the Global Meteor Network official data stream! His images, time-lapse video and astrometric results can be found at the at following weblog:

<https://globalmeteornetwork.org/weblog/US/US003Y/>

This new camera is now the fourth station in the LVAAS family after **South Mountain**, **Terry Pundiak** in Easton, and **me** in Upper Providence. Timing could not have been better with the upcoming Geminid Meteor Shower on December 13th and 14th. Last year our cameras each captured over 400 meteors during the peak evenings. For more information on the GMN, please see their website at:

[What is the GMN? - Global Meteor Network](#)

The network now has over 500 cameras worldwide used to capture daily meteor flux, discover the debris fields of well know and sometimes long-lost comets, and track the trajectories of fireballs and smaller meteors. In a few cases, the network has been instrumental in tracking meteorites right to the ground. If anyone is interested in building their own camera or would like to have one pre-assembled, please contact **Frank Lyter** or myself. We still have extra parts and components for constructing a station for you at cost. Dark skies are not required, just a decent swath of open sky to position the wide field lens.

Clear Skies and Good Luck to Steve!

John Kmetz

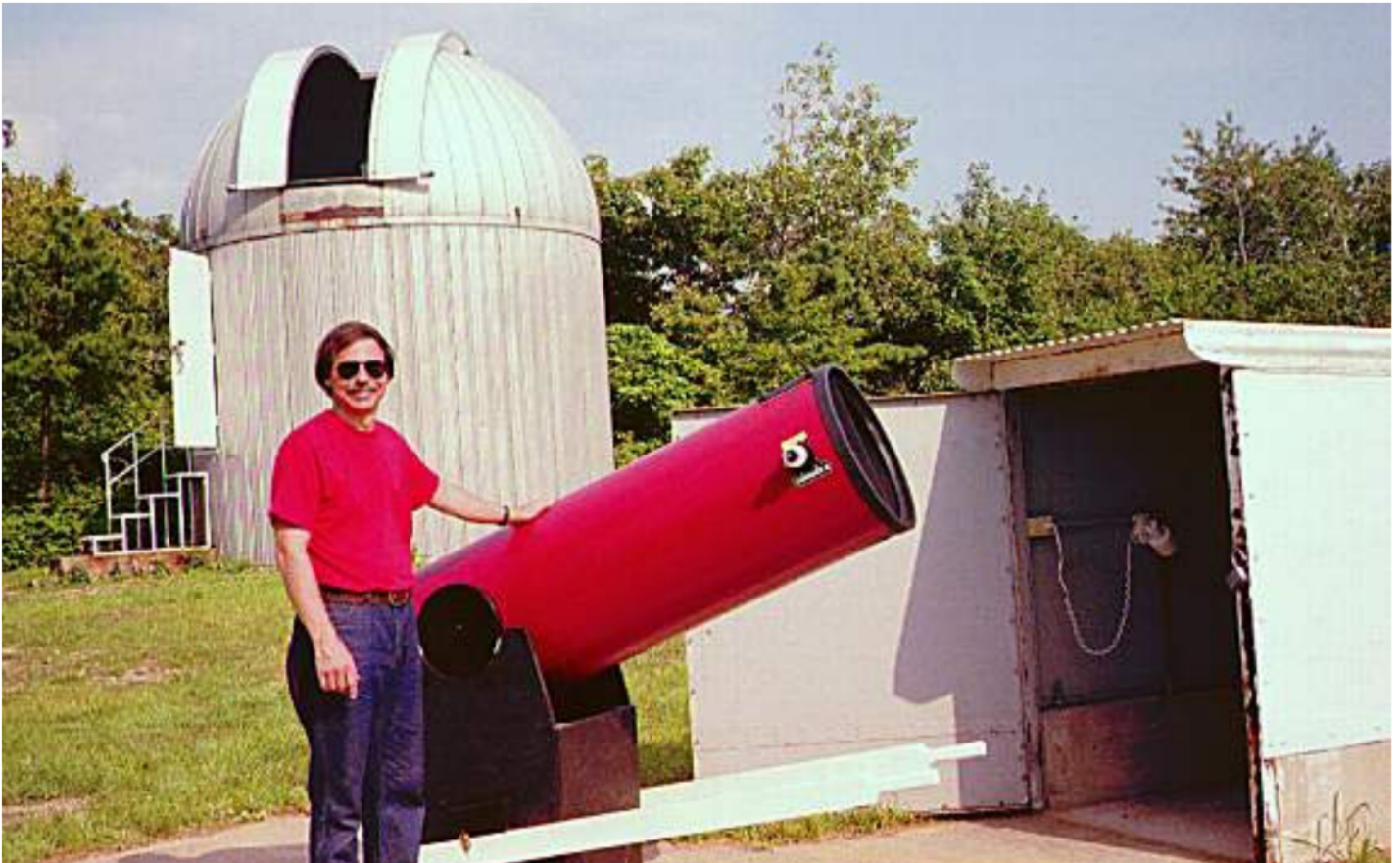
## A History of The Andrews Observatory

By George H. Maurer, 1998. Revised by Sandy Mesics 2023

It was in June of 1991 when it was decided to purchase an Odyssey 2, a 17.5-inch Dobsonian telescope from the Coulter Optical Co. in California. The purpose was to provide a simple and rugged telescope for the general membership that was easy to use. This was to be located at our Pulpit Rock site and would be housed in a small building on a concrete slab where it could be easily pulled out on a dolly for use. Members would provide their own eyepieces.

Coulter Optical Company was founded in 1967 in California. They initially manufactured smaller telescopes but by 1980 they began to manufacture larger Dobsonian telescopes. By 1988, their line included 8-in., 10.1-in., 13.1-in., and 17.5-in. scopes, all with the relatively fast focal ratio of  $f/4.5$ . The 17.5-inch which LVAAS purchased sold for \$995.00. While business was brisk for a while, by 1995, Coulter went bankrupt, and the assets were gradually sold off by Murnaghan Industries. They continued until 2001.

When the telescope was received in October 1991 the particleboard base was less rugged than anticipated and needed strengthening. More serious was the mirror which when tested suffered from spherical aberration and astigmatism as tested by the capable eyes of Barry Johnson and Tom Bash.



Barry Johnson with the 17.5-in. scope at Andrews Observatory

The mirror was duly returned to Coulter at their expense who agreed to replace it. This was unfortunately not uncommon in Coulter telescopes: many of the larger mirrors were under-corrected or suffered from astigmatism.

A corrected replacement mirror was received in early 1992. The base for the telescope was improved and mounted on a dolly to make it easily moved from its shelter house and set up. A two-inch focuser and an additional finder scope were added as well. This telescope was put into service towards the end of the year and became a practical, easily used instrument for the membership.



Ernie Andrews, center, with George Maurer, left, and Ralph Schlegel, right.

The Rev. Ernest Andrews, who liked to be called Ernie, served the society in several functions during nearly 20 years of membership. His sincerity and joviality endeared him to the members. He served two terms as Director, and several years as our Public Relations representative to the community and was a frequent contributor of interesting articles to *The Observer*. He was awarded a Life Membership in August of 1983.

Ernie died of a heart attack on February 7th, 1995, at the

age of 79. In considering his pleasant character and charitable ways it was thought to be appropriate to dedicate the Dobsonian observatory as a fitting memorial to him. The appropriate dedication ceremony was held at our annual Pulpit Rock meeting on Sunday, August 13, 1995, which designated the Dobsonian installation as the Andrews Observatory.

Ernie was always enthusiastic about the splendor of the heavens, and he shared his feelings with others. Providing a telescope for anyone to use and be able to enjoy the beauty of the starry heavens with little effort, is much in keeping with his philosophy. Ernie had a deep spiritual feeling in observing that might best be expressed by the psalmist who wrote centuries ago, "The heavens declare the glory of God and the starry heavens display his handywork."

Over the winter of 2021-2022 a team led by Frank Lyter installed digital encoders on the scope, enabling a "push to" option when used with the Sky Safari app. On May 21, 2022, a group of members cleaned the mirror and collimated the optics, putting the scope in top shape. No doubt Ernie Andrews would be pleased.

## M27 Dumbbell Nebula (Seestar) Imager: Thomas Duff



**M27, The Dumbbell Nebula** Taken: October 13 2023 Scope: ZWO Seestar S50 Camera: Internal Mount: Carbon Tripod Capture: Seestar Guidescope: None Guide Camera: None Exposures: 12min of 10sec OSC Lights, No Filters, No Calibration Frames Processing: Pixinsight

The Dumbbell Nebula (also known as the Apple Core Nebula, Messier 27, and NGC 6853) is a planetary nebula (nebulousity surrounding a white dwarf) in the constellation Vulpecula, at a distance of about 1360 light-years. It was the first such nebula to be discovered, by Charles Messier in 1764. At its brightness of visual magnitude 7.5 and diameter of about 8 arcminutes, it is easily visible in binoculars[6] and is a popular observing target in amateur telescopes.

Contributed by Thomas Duff, LVAAS Astroimaging Director



# StarWatch

## The Big One: Geminid Meteors

During the late evening of Wednesday, December 13, and the morning of Thursday, December 14, the most plentiful annual meteor shower of the year takes place. Under perfect conditions, the Geminid Meteor Shower can produce as many as 120 shooting stars per hour; however, those numbers are more than halved in the light-drenched suburban areas of the East Coast. \* Geminids move relatively slowly, and some can be exceedingly bright. Still, cloudy weather and wintery temperatures have kept them from attaining the popularity of the August Perseids. \* Meteors from an organized shower diverge from a small region of the sky called the radiant, which for the Geminids, is located just a few degrees to the northwest of the bright star Castor, the mortal twin of the Gemini brothers. \* To find the radiant, begin with Orion, the greatest Hunter in mythology. Seven stars form his body: two for the shoulders, three stars for his narrow waist, and two luminaries for Orion's knees. They are all bluish in appearance except for orangey-red, supergiant Betelgeuse, the shoulder star on the left side of the Hunter as we view him in the sky. Catty-corner to Betelgeuse is Rigel, a blue supergiant and, most of the time, the brightest star of the Hunter. Connecting Betelgeuse and Rigel, and using the distance between these two luminaries as a yardstick, move left and up two of these lengths, and you will be above two bright, closely spaced, white stars, which are the heads of the Gemini Twins, Castor and Pollux. The bright star closest to your line of

sight is Castor, the region from which Geminid meteors will fly. Go [here](#) for a map.

\* The meteoroids, the tiny specks of dislodged cometary dust that blaze into Earth's atmosphere, are moving parallel to each other in an analogous fashion to the sides of a road on a straight section of a highway. The thoroughfare diverges from a vanishing point in the distance called the radiant. \* Geminid meteoroids originate from the debris discarded by a periodic comet-turned-asteroid, 3200 Phaethon, with a 1.4-year orbital period around the sun. Comets can suffer numerous fates, like being destroyed by plowing into or coming too close to the sun's radiant heat. The outer planets, but mainly Jupiter, can eject them from the solar system, or they can systematically reduce their elongated orbits until some lose their comet-like identities and become asteroid-behaving objects orbiting the sun. \* Geminid meteors will be plentiful mainly after midnight on the morning of December 14, but for the moment, go outside and see if you can find the location of the radiant. That will prepare you for how you want to orient yourself on maximum night. Remember to check your inventory of heat-retaining clothing too! Overdress, since it will most likely be the cold that drives you indoors on Geminid maximum night. \* Also, do not worry about the moon with this season's meteor shower because Luna is only hours past its new phase. Wishing everyone good Geminid hunting. Ad Astra!

## For Sale – Explore Scientific 102mm triplet telescope with Celestron AVX mount/tripod and much more

This is a five year old Explore Scientific 102mm telescope and Celestron AVX mount/tripod system that was lightly used and in excellent condition. It can be used for typical astronomical viewing or for astrophotography [some camera adapters included]. The goto mount can find clusters, nebulae, planets, galaxies, etc. The replacement cost for all the equipment included in this sale is roughly \$3,100 at Skies Unlimited. Asking **\$1995** cash only [maybe a bit negotiable] and pickup locally in Emmaus.

More pictures and/or details upon request.

Included in the sale:

Explore Scientific ED 102 Telescope, 5 mm Cel LX eyepiece, 25 mm Cel LX eyepiece, explore Scientific 2" diagonal, Celestron Powertank Lithium Pro, Celestron AVX mount/tripod, Telescope cover, 8x50 finder scope with reticle.

Please email Mike Waddell if interested: [mgwaddx@gmail.com](mailto:mgwaddx@gmail.com)



# Astronomers!

**Public Online Auction of Astronomy Gear**  
*Sponsored by Delaware Valley Amateur Astronomers*

**Bidding online Nov. 11-Dec. 13; live bidding continues in person Dec. 15 @7pm at Radnor Township Municipal Building**

Check it out at <https://www.32auctions.com/DVAA2023>



**And more!**





Science & Astronomy

August 31 · 🌐

Van Gogh's starry night with the first image taken by the James Webb telescope 🤖

Credit: alpgenart

# DECEMBER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					01	02
03	04	05 Last Quarter Moon	06	07	08	09 General Meeting/Holiday Party - 11:00 AM
10	11	12 New Moon	13	14	15	16 Astroimaging Meeting - 7:00 PM
17 LVAAS Board of Governors Meeting	18	19 First Quarter Moon	20	21	22	23
24 Deadline for submissions to the Observer	25 Christmas	26 Full Moon	27	28	29	30
31						

# JANUARY

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	01 New Year's Day	02	03 Last Quarter Moon	04	05	06
07	08	09	10	11	12	13
14 General Meeting 3:00 PM Muhlenberg College	15 Martin Luther King Day	16	17 First Quarter Moon	18	19	20
21 Deadline for submissions to the Observer	22	23	24	25 Full Moon	26	27
28 LVAAS Board of Governors Meeting	29	30	31			



*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/>

# 2024 LVAAS EVENT CALENDAR

Contributed by Bill Dahlenburg

2024 LVAAS Event Calendar											
	Sundays		Board meeting	Saturday			Observer Submission Deadline	Moon Phase			
	General Meeting time	location		Astro-Imaging	Star Parties	Stargazers Group		New	1 <sup>st</sup>	Full	3 <sup>rd</sup>
January	14	3:00 PM Muhlenberg	28	no meeting	no meeting	no meeting	1/21/24	11	17	25	3
February	4	3:00 PM Muhlenberg	25	no meeting	no meeting	no meeting	2/18/24	9	16	24	2
March	10	3:00 PM Muhlenberg	24	no meeting	16	8	3/17/24	10	17	25	3
April	14	7:00 PM S.M.	28	6	13	12	4/21/24	8	15	23	1
May	5	7:00 PM S.M.	19	11	18	10	5/12/24	7	15	23	1 30
June	9	7:00 PM S.M.	30	1 29	15	14	6/23/24	6	14	21	28
July	13/14	5:00 PM S.M.	28	x	20	12	7/21/24	5	13	21	27
August	10/11	7:00 PM Pulpit	25	3 31	17	9	8/18/24	4	12	19	26
September	8	7:00 PM S.M.	29	x	14	13	9/22/24	2	11	17	24
October	13	7:00 PM S.M.	27	5	12	11	10/20/24	2	10	17	24
November	10	2:00 PM S.M.	24	2	9	8	11/17/24	1	9	15	22
December	8	2:00 PM ?	29	7	no meeting	no meeting	12/22/24	1 30	8	15	22

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 4/20 - 4/21  
 Mega Meet 5/3 - 5/5  
 CSSP 6/6 - 6/9  
 Stellafane 8/1 - 8/4  
 BFSP

October 4-5-6?

## 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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