

The Observer

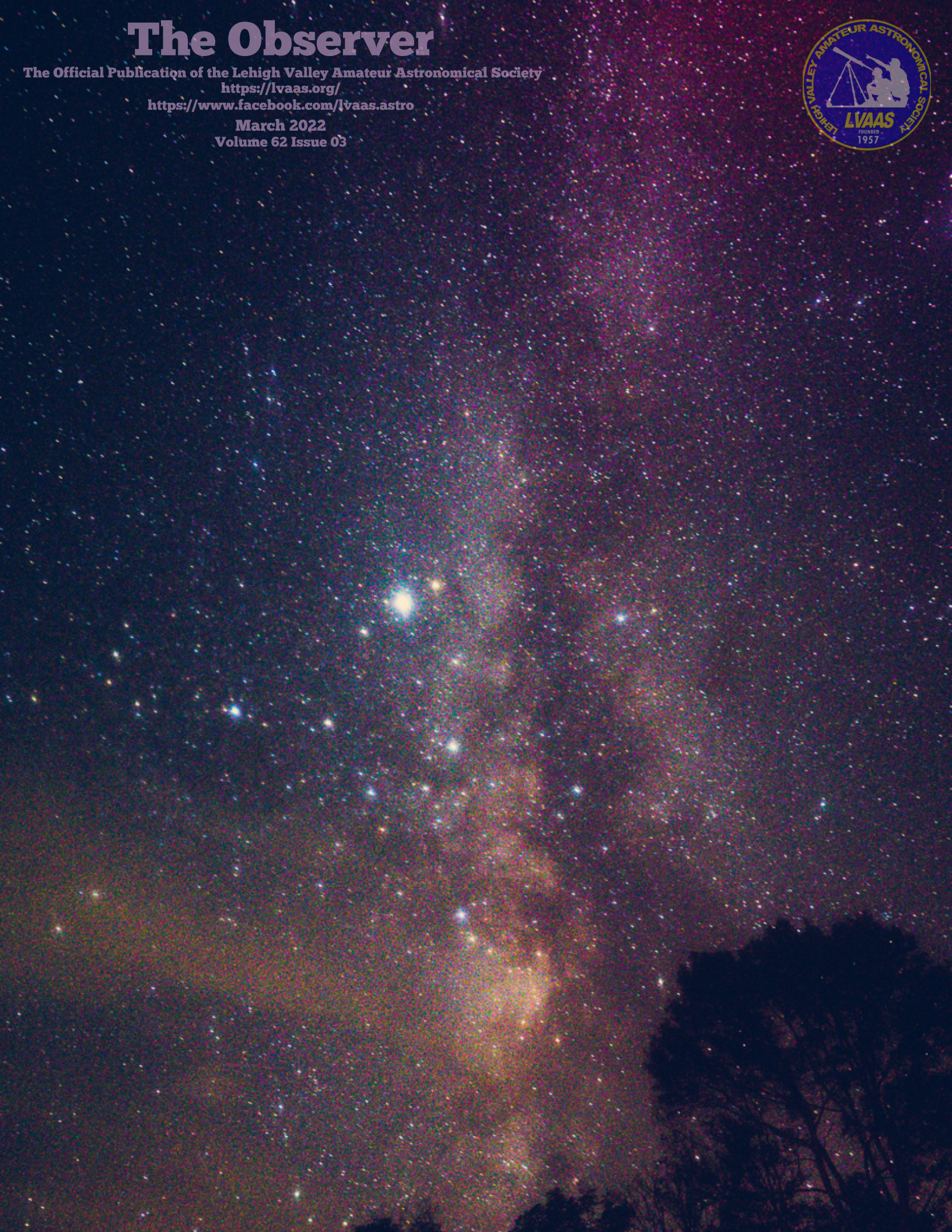
The Official Publication of the Lehigh Valley Amateur Astronomical Society

<https://lvaas.org/>

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

March 2022

Volume 62 Issue 03





ad astra *****

I am sure all of you, like the Board of Governors (BOG) has been waiting for things to get back to normal. I am happy to report that the BOG has voted to fully open things up for business. This means activities including, Star Parties for the general public and Astro-Imaging meetings for members will be open for in person participation in March and the General meeting for members will be open for in person participation in April.

The following March activities will be held:

- March 12th 6pm Star Party at South Mountain
- March 13th 3pm General Meeting (ZOOM Only) Don't forget Daylight Savings Time begins at 2a.m. on March 13th!
- March 26th 7pm Astro-Imaging Meeting at South Mountain

The plan for the March Star Party is to have the children's planetarium show at 6 pm, a 30 min pre-recorded slide show on NASA's exploration of our solar system at 7 pm, and the regular planetarium show at 8 pm. The BOG looks forward to seeing everyone at the March Star Party.

Additionally, LVAAS is scheduled for a Solar Day at the DaVinci Science Center on May 14th. This event will be part of a series of events that DaVinci is doing related to a nation-wide event called "Remake Learning Days Across America", which runs from April 22 – May 23. More information on these activities can be seen online at <https://remakelearningdays.org/>

We are always looking for volunteers to assist with club events. These include Star Parties (Guiding Parking for Cars, Run the Red Shift, Run the various 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

The CMB-S4 Saturday Science Series

Attention High School Students! If you are interested in some of the most fascinating mysteries of our universe, here is a great opportunity for you!

What: Saturday Science Series (CMB-S4, a National Science Foundation and Department Of Energy supported project)

When: April 9, 16, 23 and 30 (all Saturdays), 11am EDT

Where: Online

Who: High School students (grades 9 - 12) who are interested in the mysteries of our universe

Cost: Free!

Here is a brief background and summary from the leader of the program, Felipe Maldonado:

I am frequently fascinated by kids' questions. And I especially like questions that adults don't ask. I've never heard an adult ask how the Sun shines, or why the night sky is dark, and yet these questions, it turns out, are among the most important questions in astronomy. Neither of them had a rigorous answer until the 20th century, either. Surely your first impulse if someone asks why the night sky is dark would be to say that it's because the Sun isn't around. But since every single star in the sky is about as bright as the Sun, then shouldn't they be bright enough to make the night sky bright? As it turns out, this problem is called Olbers' Paradox, and the solution of the paradox is that the Universe either has a finite age or a finite size, or both. The mere fact that the night sky is dark is evidence of something as profound as that, and I am always amazed by this fact. We could say that Olbers' Paradox was among the first rigorous tests of a new discipline of astronomy called cosmology, the study of the Universe. Cosmology is tasked with the study of the contents of the Universe, its history, origin, and eventual fate.

My curiosity about the early Universe, dark matter, dark energy and so on led me to become a cosmologist and join the CMB-S4 Collaboration. The Collaboration is a network of professional cosmologists who study the cosmic microwave background (CMB), the earliest light of the Universe. It comes to us from a time before stars, when the Universe was merely ~300 000 years old. The scientists of the Collaboration are designing and working on the building and operation of a new observatory that will observe the CMB from Chile and Antarctica. I lead an outreach initiative called the CMB-S4 Saturday Science Series, a program of 8 talks over 4 sessions given by cosmologists. It is fully virtual, free of charge, and those who take part in all four sessions will receive a certificate of participation that we hope will help in academic endeavors. It is intended for high school students. We will cover topics like the Big Bang, inflation, dark matter, dark energy, unsolved mysteries in cosmology, and more. I hope you can join us, and I would be grateful if you could share this article with people you think might be interested.

Felipe Maldonado, Ph.D.

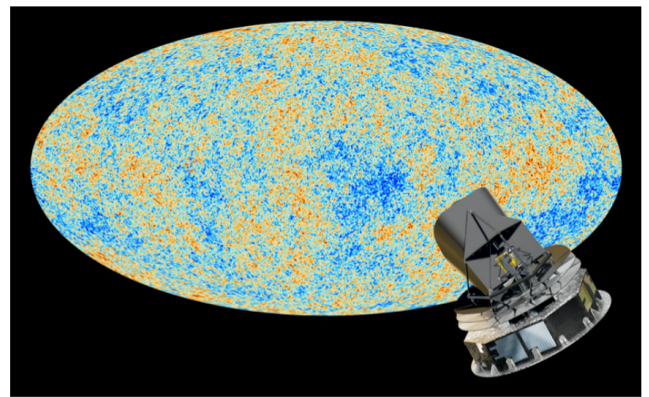


Figure 1: The cosmic microwave background with the Planck satellite in front. Credit: ESA and Planck Collaboration.

Register here: <https://forms.gle/5a6WjqXP5VmsDRK68>

Series Agenda: <https://cmb-s4.org/outreach/upcoming-events/>

We hope to see some of our young, curious minds there!

Article submitted by: Blaine Easterwood

Minutes from the LVAAS General Meeting – February 6, 2022

The February 2022 LVAAS General Meeting was conducted electronically using an on-line service. Approximately 25 people were in attendance. Director Tom Duff opened the meeting at 3:03 p.m.

At tonight's General Meeting James Chen presented "My 50-Year-Old A. Jaegers Telescope Returns Home."

“Last year during the height of the pandemic, I was able to be reunited 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

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, D.C./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, D.C. 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”

Membership: Rich Hogg

- 2nd readings
 - Dustin Rego
- 1st readings
 - Gabriel McCoy

General Comments:

- The next Star party is scheduled for Saturday, March 12th at 7 p.m.
 - Help will be needed with operating the observatories, parking, Redshift Store (reach out to Preston Smith to volunteer for a shift), and manning the planetarium doors.
- The next Astro-imaging meeting is scheduled for Saturday, March 26th at 7 p.m.
- Registration for the Northeast Astronomy Forum (NEAF) has opened and will be held on April 9-10 in Suffern, N.Y. Information and tickets can be found at www.neafexpo.com

South Mountain Maintenance – Bill Dahlenburg

- South Mountain lawn, road, and parking area are all covered in ice, including the road leading from AT&T building. Be extra cautious.

Pulpit Rock Maintenance – Ron Kunkel

- Pulpit Rock is still inaccessible by vehicle.

Next General Meeting:

- The next General Meeting is scheduled for Sunday, March 13th at 3 p.m. Felipe Maldonado from the DaVinci Science Center will speak on the Big Bang. The meeting will be conducted electronically using an on-line service.
- In April, Doug Arioun 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."
- If any members would like to speak or give a presentation at the July or August meetings, please contact Sandy Mesics, Director of Programs for General Meetings.

The February General Meeting was recorded.

The meeting was adjourned at approximately 4:11 p.m.

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Submitted by Michael Huber, Secretary

LVAAS General Meeting: Online only
Sunday, March 13, 3:00 p.m.

**"The Big Bang and the
Expansion of the Universe"**

presented by

Felipe Maldonado



Felipe will speak about how we know the Universe began with the Big Bang, how we know the Universe is expanding, and what we used to think before those theories were developed. He will give a brief historical outline of cosmology and finish with what we understand today.

Felipe Maldonado works at the Da Vinci Science Center in Allentown, where he does outreach for children in the Lehigh Valley. He is Chilean, and earned his Bachelor's degree in Astronomy at Universidad de Chile and his Ph.D. in Astrophysics at Florida State University. Felipe works on Cosmology.

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

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

LVAAS needs a speaker for August at Pulpit Rock. Please consider volunteering: Saturday, Aug. 13 at 7 p.m. Please email Programs Director Sandy Mesics: astrosandy@gmail.com

In March, **Felipe Maldonado** from DaVinci Center will speak on "The Big Bang and the Expansion of the Universe"

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

In May, **Jon 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."

In July, **Ray Harris** will speak on "Lost Constellations"

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

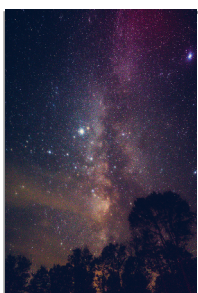
Please access and sign the petition to create legislation to save our dark skies at this link:

<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: The Milky Way from Cherry Springs Imager: Mike Waddell

Mike captured this beautiful image of our Milky Way back in October, 2021, while camping at Cherry Springs State Park. Why not consider making the trip this fall season?

<https://cherryspringsstatepark.com/stargazing/>



Night Sky Notebook
for
March
by
Peter Detterline

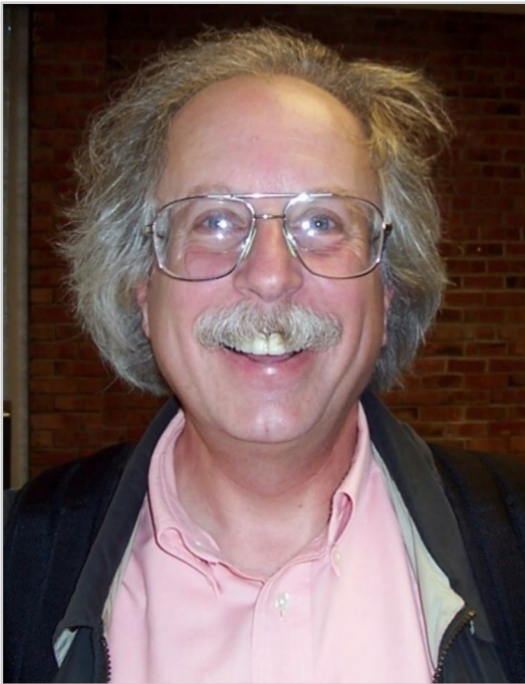


From the LVAAS Archives:

Norman Sperling Speaks at LVAAS

by Sandy Mesics

I am often amazed at the number of notable astronomers, both professional and amateur, who have given presentations at LVAAS over the years. In March 1972, Norman Sperling, who was then the 24-year-old curator of the Duncan Planetarium of the Princeton Day School spoke about planetaria. At that time, Sperling had compiled the first directory of all known planetariums operating in the U.S., the *Catalog of North American Planetaria (CATNAP)* for the International Planetarium Society. Later, editors expanded this into the world-wide *Planetarium Directory*.



Norman Sperling

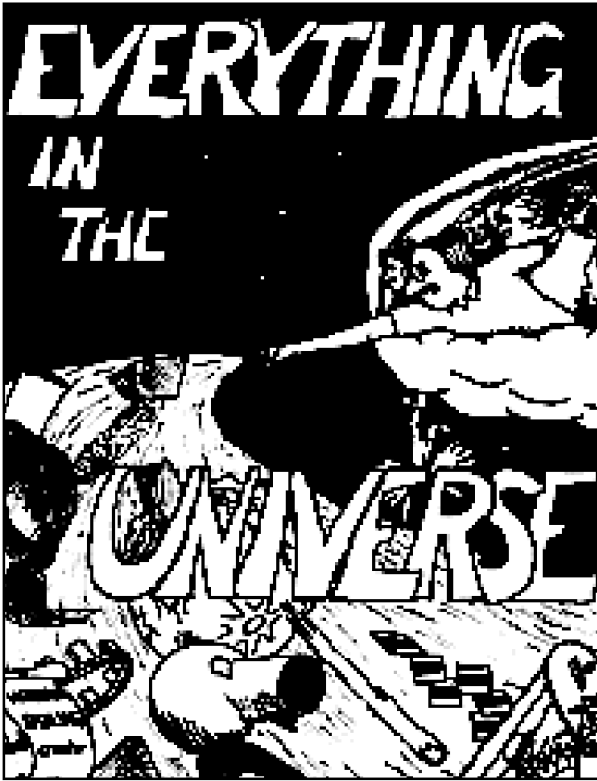
He discussed the types of equipment in use and gave his opinions of their usefulness as well as their limitations. Sperling displayed several charts showing the geographical distribution of planetaria and noted that Pennsylvania led with several hundred in the commonwealth. He also mentioned that being a planetarium director was a good fit for a person with a practical collective background in astronomy, audiovisual aids and electrical circuitry.

Sperling received a BA from Michigan State University after graduating from Montgomery Blair High School in Silver Spring, Maryland. He earned his MA in History of Science from the University of California, Berkeley. In 1975-76 Sperling was working as a designer with Edmund Scientific Company along with optical engineer Mike Simmons. The pair came up with the basic design of the Astroscan telescope, a product that is a classic in telescope design and remains in production to this day.

The Astroscan was Norm's first big business project. It won top rating in Consumer Reports and won an Industrial Design Award in 1976.

Sperling was an editor at *Sky & Telescope* from 1976 to 1981. In 1977, he started his own business named "Everything in the Universe," when he sold one-of-a-kind copper printing plates from *Sky & Telescope* after the publication had updated from engraved copper printing plates to lithography. Management of *Sky & Telescope* didn't want them sold under a staff-member's name, and other editors made fun of his "Own a Piece of Sky & Telescope" ad, though it reportedly worked quite well. According to Sperling, "I advertised the beautiful old copperplates under the headline 'Own a Piece of Sky & Telescope.' A lot of customers bought them as-is. And some also paid a premium to get them polished and mounted on plaques." In an editorial in *Astronomy Magazine* after the demise of the Arecibo radio

telescope, Sperling proposed a similar approach: “Though it may seem crass, selling off fragments of Arecibo will create goodwill and lasting memories worldwide. It will generate some much-needed local employment. And it will earn money, which can support the education and outreach activities that will continue onsite at Arecibo.



While at *Sky & Telescope*, he wrote a series of articles that expanded "Astronomy Day" from a few scattered sites to a coherent international program. He also authored the book "What Your Astronomy Textbook Won't Tell You" and he has written over 100 articles for many science and astronomy magazines.

Sperling moved to California in 1982 and taught astronomy at the University of California, Berkeley, Sonoma State University, and Merritt College. He lectured for many years at Morrison Planetarium in San Francisco. He has also provided expert astronomical testimony in court trials. The most high-profile case in which he testified was known as the Billionaire Boys Club case in 1992. He was able to nullify the testimony of a key prosecution witness. The defendant was acquitted.

Sperling received the Western Amateur Astronomers' 1992 National Service Award, a "Special" (combined professional, amateur, and company) Award from the Astronomical Association of Northern California in 1989 and was named a "Fellow" of the International Planetarium Society in its first induction, 1986.

References

The Observer, March & April, 1972.

<https://astronomy.com/news/2021/02/opinion-the-case-for-selling-off-pieces-of-arecibo>

<https://web.archive.org/web/20040803085844/http://everythingintheuniv.com/index.html>

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



StarWatch

Super Volcanoes

My wife, Susan, has an incredible knack for picking out books that would interest me; so when Christmas comes around, I can always be assured that there will be good reading ahead. In the half dozen tomes that she presented to me this past Yule, *Super Volcanoes* by Robin George Andrews, W.W. Norton & Company, 2022, was the one that caught my attention first. With its flashy, coat-of-many-colors jacket, I thought I would be in for a really smooth ride, but it was bumpy at first. Andrews' style is super volcanic in itself. His enthusiasm for volcanoes is so effusive that I thought I was being denied authenticity in exchange for the sparkly, dynamic, fresh prose that emanated from his writings. I was wrong here. I just needed to get used to his style. • And talking about enthusiasm, what is my most memorable travel experience? It was in a chopper hovering about 300 feet above Hawaii's Puu oo (Pu'u'ō'ō) volcano while in eruption, watching bursts of intensely hot lava spraying and globing into its caldera. When the helicopter banked, offering me a better view into the pit, the blast of heat flash fried my face just like opening the door to an immense oven. Yes, volcanoes can be pretty exciting, even if you have only seen one of them in eruption. • *Super Volcanoes* is also written as a series of many, many interviews. I found this somewhat distracting in the beginning because it was hard to draw a consensus. Andrews has a PhD in volcanology, and I thought his opinions on the science might act as a unifying theme for the book. On the flipside, scientists often disagree on important matters in their specific areas of research. Perhaps Andrews was simply leaving the reader to form his or her own opinions about the conversations. • However, this issue has no compromise. I've had my share of geology courses, so I know how important it is to visualize the information that is being presented, no matter how talented the writing may be. Show the reader diagrams of seafloor spreading, subduction zones, and the like. Use maps to locate the places that

are being discussed in the work. *Super Volcanoes* could be a textbook for Volcanology 101, if Andrews increased its visual appeal. • Robin Andrews also has a sense of humor. After explaining in great detail why it is highly doubtful that the super volcano under Yellowstone National Park will ever crackle, fizz, or pop—there is not enough liquid rock (magma) under it and the mantle plume (hot spot) responsible for the super volcano is moving over even more mountainous terrain making it less likely that an eruption will be able to push through the deepening crust in the future—Andrews continues to explain the scenario that everyone really wants to hear. What would happen if it really did explode? • He also sheds light indirectly on the age-old question asked by countless third graders during my 38 years in public education. What would happen if the sun suddenly stopped shining? “Well kids,” as my 1972 answer went with sheepish class laughter in the background, “we would all die and life as we know it would end.” The answer today with volcanism taken into consideration is not that simple. Yes, the surface of the Earth would get numbingly cold in most places, but those 10,000 to 100,000 active volcanoes, spewing out the Earth's interior heat along the mid-oceanic ridges of the world would remain active, continuing to cultivate some of the most bountiful places for life that exists on this planet today. That could continue for billions of years into the future. Life is never a done deal if the warmth from volcanism is present, and when disruptions occur, life finds a way to readjust. This leaves open countless possibilities for a myriad of planets and moons in our own solar system to sustain living organisms too, even including the atmosphere of a hellhole like Venus. • If you like volcanoes; I believe that you'll enjoy *Super Volcanoes*; just realize that you might have to Google images of some of the places and geologic terms that you will encounter along the way. 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](#)

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



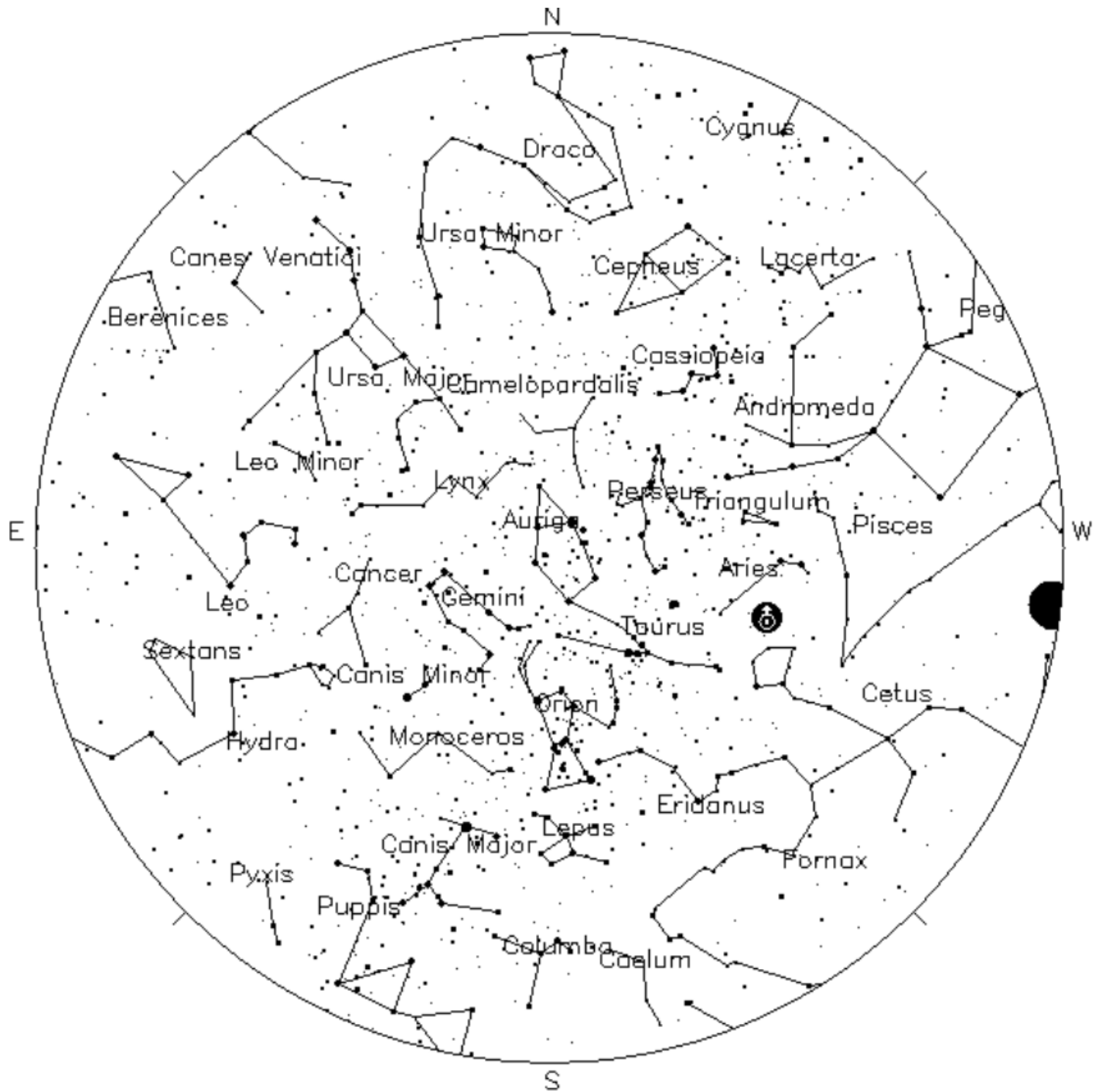
And when you start cooking, stay neat and clean with our own LVAAS apron. Choose our current logo (left) or our retro 1959 logo (below). 100% cotton twill, 31" long x 29" wide, two large pockets. Machine wash cold, tumble dry low. Only \$20.99



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

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

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

MARCH 2022

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		01	New Moon 02	03	04	05
06	07	08	09	First Quarter Moon 10	11	Star Party 12
General Meeting - 3:00 PM 13	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		

APRIL 2022

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					New Moon 01	
03	04	05	06	07	08	First Quarter Moon
						Star Party
General Meeting - 7:00 PM 10	11	12	13	14	15	Full Moon
Easter 17	18	19	20	21	22	Last Quarter Moon
Deadline for submissions to the Observer						Astro Imaging at SM 7pm
LVAAS Board of Governors Meeting 24	25	26	27	28	29	New Moon

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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To become a member of LVAAS, please submit an application form, which can found in this publication or downloaded at https://lvaas.org/filemgmt_data/files/LVAAS_New_Member_Form.pdf

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

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