

The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

<https://lvaas.org/>

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

July 2022

Volume 62 Issue 7





ad astra *****

Last month Ron Kunkel informed us that our Pulpit Rock lawn mower had met its demise. This meant that with the approval of the Director and the Treasurer an emergency request of \$2900.00 was made and approved to purchase a replacement lawn mower. The Board discussed various options to pay for the purchase and ultimately decided to increase the Pulpit Rock Maintenance budget to cover the purchase. Note: Since this purchase is above 10% of the LVAAS budget we will, as required by the LVAAS By-Laws, submit the change to the members at the July General Meeting for approval.

We are happy to announce we will be returning to having the LVAAS Family Picnic. The picnic will be held on Saturday July 9th at 5pm (Rain Date Sunday) at the South Mountain site. LVAAS will supply the hamburgers, hot dogs, rolls, and sodas for the event. The event is potluck so please bring your own unique food creations to for all to enjoy. All members in good standing and their families are invited to attend. Additionally, we will also have a Swap Meet where members are invited to bring any astronomy items they want to sell. There are usually good bargains available so don't forget to bring your spare money.

A meeting was held June 25th of the AstroImaging group at South Mountain. Fourteen persons were in attendance. A video was presented about planetary imaging. Lynn Krizan then presented his newly repaired telescope. Paul Tracy (new prospective member) then presented about his journey over the last three years from complete novice to experienced astroimager. Since there was good weather, we then went outside where Frank Lyter demonstrated his Meteor Camera and Mike Huber set up his imaging equipment and demonstrated its use.

Pulpit Rock will be switching to combination locks on the observatories. Those with physical keys to the current locks will be given the combination (all observatories will have the same combination.) The Pulpit Rock key gate lock will remain the same.

Ad Astra!

Thomas Duff



LVAAS MEGAMEET*****

The annual LVAAS weekend camping and observing event, held at our Pulpit Rock Astronomical Park will be held on August 19-21, 2022.

MegaMeet is LVAAS's bare bones star party, without vendors, speakers, or registration fees. Members in good standing of regional amateur astronomy clubs are invited to attend.

There is no fee for attending or camping. However, please notify Tom Duff, our MegaMeet coordinator, of your intention to attend so we can obtain a head count and plan accordingly. For LVAAS members without gate keys and regional club members, access will be available Friday from 4:00 PM to 7:00 PM and Saturday from 4:00 PM to 7:00 PM.

Access to the site, behind the locked gate, is via 2 miles of some rather steep gravel mountain road. The road is in good shape and is readily accessible for cars and light trucks, however if you are towing a small camper, it is recommended that your vehicle be 4-wheel drive. Larger campers should not attempt to access the site.

There will no food service or potable water on site so please plan on bringing your own food and drinking/cooking water. If you do plan on bringing your own food and cooking it yourself, you must use either charcoal or gas for cooking as no open fires are permitted on site.

There are no shower facilities; however, there is a flush toilet available on site.

Please visit lvaas.org for pictures of the site and directions.

Regards

Thomas Duff

Director

Minutes of the LVAAS General Meeting – June 12th, 2022

The June 2022 LVAAS General Meeting was conducted electronically using an on-line service and live at the South Mountain headquarters. Approximately 42 people were in attendance. Director Tom Duff opened the meeting at 7:05 p.m.

Tonight's General Meeting's presentation was "A Tale of Two Circles: From Orbits to Atoms" with speaker Gary DeLeo of Lehigh University.

"The study of astronomy would not be complete without an appreciation of the importance of circles, circular motion in particular. Circular motion is not only common in nature, but also critical to our understanding of the composition of the universe and how it works. We will examine two aspects of such motion, one which takes place at a very large scale, planetary and stellar orbits, and the other at a very small scale, electrons in orbit about the nucleus of an atom. In so doing, we will have fun with the numbers that characterize planetary and stellar motions. We will then examine the atomic-scale motions responsible for the spectra of stars that tell us practically everything we know about them.

Professor Gary DeLeo was a member of the Lehigh University faculty in the Department of Physics for forty years before retiring at the end of 2019. He received his Ph.D. from the University of Connecticut with a specialty in theoretical solid-state physics. He has served as Associate Dean in the College of Arts and Sciences and as Chair and Associate Chair of the Department of Physics. His passion for astronomy – a field that he has followed closely for about fifty years – led to his change in research area to astrophysics, with a focus on binary stars. Professor DeLeo has run a significant number of science outreach programs and he is the recipient of seven teaching awards and honors." (speaker profile) The June General Meeting was recorded.

Membership - Rich Hogg

Second Readings

Harold Bell
Robert Driesbach
Michael Ackumey
Jolene Nye
Patty Bacak

First Reading

Jeff Mucklin

General Comments

The next astroimaging group meeting will be June 25th at South Mountain. Thanks to Earl Pursell for leading a crew (Tom Duff, Frank Lyter, Sandy Mesics and Pete Brooks) to Freedom High School to gather equipment with the help of John Harvey. Freedom decided to close down their planetarium to open a Wellness Center.

Bill Dahlenburg is looking for volunteers to help out on Saturdays at South Mountain with mowing grass, waxing floors, etc. If interested please email sm_maintenance@lvaas.org. Earl is looking for people to train on the planetarium. If interested please email planetarium@lvaas.org. Volunteers are needed for the Star Parties as well. If interested in volunteering at Star Parties or other activities, please email Preston Smith at theradiobench@gmail.com

Technology (Computer and Internet Services) – Rich Hogg

This was the first time a speaker presented here (South Mountain) live and simultaneously on Zoom. I (Rich) am interested in peoples' opinions on getting a better microphone for the club and how to improve the experience. For example, Zoom can share slides but cannot see what the speaker is pointing to. Comments and suggestions please email technology@lvaas.org

Pulpit Rock Observatories – Frank Lyter

Members are encouraged to sign up for Pulpit Buzz to send and receive emails to everyone else subscribed. Ron Kunkel and Frank Lyter are open to training people on the different scopes. Frank is working on a write-up of the instructions for Sky Safari Pro/Plus to use the Dobsonian telescope.

Pulpit Rock Maintenance – Ron Kunkel

Ron will be going up late tomorrow (6/13) to mow the grass at PR for the second time. The last mower failed and the club had to buy a new mower. An emergency request, as per the bylaws, was submitted and approved. Details will appear in the budget report on a later date.

Next General Meeting:

The next general meeting will be at South Mountain and combined with the Annual July Picnic on July 9th at 5 p.m. Ray Harris will be presenting "Lost Constellations" live.

The meeting was adjourned at approximately 8:50 p.m.

Submitted by Michael Huber, Secretary

Via Sandy Mesics, Program Chairperson

Upcoming LVAAS General Meeting Speakers

In July, **Ray Harris** will speak on "**Lost Constellations.**" - Live at SMHQ Grady and online via Zoom.

In August, **Frank Lyter** will speak on "**LVAAS Winter Projects: the Meteor Camera, and the Digital Setting Circles for the 17" Dobsonian.**" - Live at Pulpit Rock

In September, **Rick Wasatonic** will speak on "**Photometry of Betelgeuse.**" - Live at SMHQ Grady

In October, **Mike Huber** will speak on "**Astronomy with Kids**" - Live at SMHQ Grady

Speakers are still needed for November and December; please contact Sandy to volunteer or to suggest a speaker: astrosandy@gmail.com

Via Carol Kiely

International Moon Day is July 20, 2022! Join the Moon Village Association for Int'l Moon Day festivities on July 20. This date was chosen as it celebrates the anniversary of Apollo 11, the first mission to see humans set foot on the moon. For more information and additional activities, please see:

<https://internationalmoonday.org/>

onthemoonagain.org

<https://moon.nasa.gov/observe-the-moon-night/>

Via Earl Pursell, UACNJ Liason:

United Astronomy Clubs of New Jersey (UACNJ), of which LVAAS is a member, is holding Public Nights (Star Parties) every Saturday from now until the end of October. There will be a talk beginning at 8 p.m. live and online, followed by observing. Since both the talk and the observatories are outside, everything is weather permitting. Reservations are suggested, but not required. Please visit www.uacnj.org for more information.

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: Messier 8 in Sagittarius - The Lagoon Nebula - Sandra Repash, imager

The Lagoon Nebula, captured in Hydrogen Alpha June 18, 2022 at home in Bernville, Pa. This is a limited exposure of only forty minutes plus five dark frames, no other calibration frames were used.

Telescope: Stellarvue 102T carbon fiber.

Camera: Atik 490ex monochrome.

Mount: Celestron AVX.

Filter: Astrodon Hydrogen Alpha 5nm.

Library Announcement

The following books are new to the library:

David Levy's Guide to Observing Meteor Showers by David Levy

Ignition! by John Clark

Extraterrestrial by Avi Loeb

Spacesuit: Fashioning Apollo by Nicholas deMonchaux (donated by Pete Detterline)

Apollo 11: The Moon Landing In Real Time by Ian Passingham

Cosmos: Possible Worlds by Ann Druyan

Mask of the Sun by John Dvorak

Heroes of the Space Age by Rod Pyle

An Infinity of Worlds by Will Kinnery

Galaxies by David Eicher

Seeing the Sky by Fred Schaaf

The following DVDs are new to the collection:

The Great Year by Walter Cruttenden, narrated by James Earl Jones

NASA Infrared Platforms by John Conrad

A Tale of Two Circles by Gary DeLeo

The library is always looking for requests of books and DVDs. Please email me with what you would like to see in the collection and I will do my best to locate what has been requested.

The following were donated by Mike Huber as part of the NEW children's section of the library:

Space! The Universe as Never Seen Before by Rachel Fox

There's No Place Like Space! Revised by Tish Rabe

Stars by Seymour Simon

Our Solar System by Seymour Simon

Read, Search & Find Space by Raphael Rosen, Kidsbooks, Inc.

A Child's Introduction to the Night Sky by Michael Driscoll

Submitted by Dave, Raker, LVAAS Librarian draker@cedarcrest.edu

LVAAS General Meeting at Grady Planetarium
Saturday, July 9
Picnic at 5 p.m. Presentation begins at 7 p.m.

please see lvaas.org for details

"Lost Constellations"

presented in person by

Ray Harris

and online via Zoom



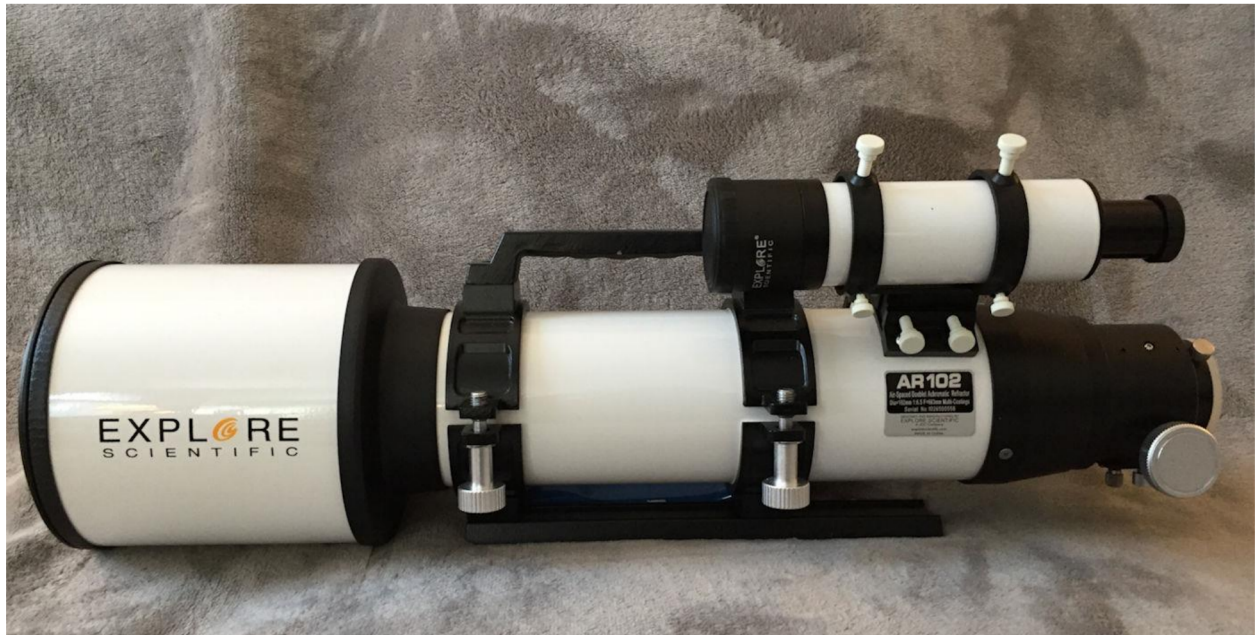
Today's 88 constellations were formalized by the International Astronomical Union in the 1920's. Our modern constellations started with the 48 listed in Ptolemy's 2nd-Century Almagest. We will explore how new constellations were introduced starting in the 16th century and take a look at some of the more than 100 that have been abandoned. This will be a preview for his two upcoming articles for *Sky & Telescope*.

Ray Harris has been a member of LVAAS since 1985 and has served as both Treasurer and Director. After graduating from Yale in 1972 he served five years in the Navy as a nuclear engineer on a submarine. He settled in the Lehigh Valley in 1980 when he accepted a job with PP&L. Ray started collecting antique star charts in 1987 and has accumulated an extensive collection of original material dating back to the early 1500's. He has lectured widely on the history of celestial cartography and his article "The First Deep-Sky Atlas" appeared in the January 2022 issue of *Sky & Telescope*.

New members who wish to attend the meeting should email membership@lvaas.org.

For Sale: \$250 – *Price reduced!*

**Explore Scientific - AR102 f/6.5
Air-Spaced Doublet AR Series
Achromat Refractor Telescope**



Virtually new in box. Includes dual speed 2" focuser, cradle rings with handle, 8x50mm finder, and all packing materials. This same model scope is currently selling for \$600 if you can find it. The reason I am offering so cheap is that I am keeping the 2" diagonal. I have a 1.25" diagonal and 2" adapter that I will sell with the scope for an additional \$25 if needed.

Contact: Bob LaFleur BLF999@Gmail.com

FOR SALE



Meade equatorial wedge and parts for the 8 inch LX 200 telescope
\$100

I will bring the wedge to the picnic.

David Raker

draker@cedarcrest.edu

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>



Peter Detterline's
Night Sky Notebook
JULY 2022



From the LVAAS Archives: The Alchemy of Film Astrophotography

by Sandy Mesics

At the June 1972 general meeting, attendees were treated to an in-depth discussion of astrophotography by Mr. Robert Richardson of the Questar Company.

In the 1970s film astrophotography was not for the faint of heart. Amateurs were able to find “High Speed” Ektachrome color transparency film ISO 160, and Tri X B&W print film with a whopping 400 ISO. Unfortunately, at that time, the higher the film speed, the poorer the resolving power. Richardson talked about the trade-offs of the greater resolution of the slower films with the shorter exposures needed by the high-speed films.



LAST MONTH'S MEETING: Mr. Robert Richardson of the Questar Corporation, presented an excellent lecture on his experiences at astrophotography over the past many years. He noted that the resolving power of film is of prime concern in its selection. He stated that the faster films have the poorest resolving power (the ability to record fine detail) while the slower films generally had the greatest resolution. Most medium speed panchromatic films (ASA25-100) will be satisfactory and there are special films for this purpose which are listed by photo suppliers. The sacrifice of film speed for resolution

Most astrophotographers at that time did not have the equipment to develop color transparency film but were able to process Tri X film at home. Using longer times in the developing solution, film could be pushed to double or triple its ISO. Of course, this came at the cost of increasing the grain as well as the contrast. Exposure times, even for lunar and planetary images, were shockingly long by today's standards. See the photos of Jupiter and Saturn below for some astounding exposure times.

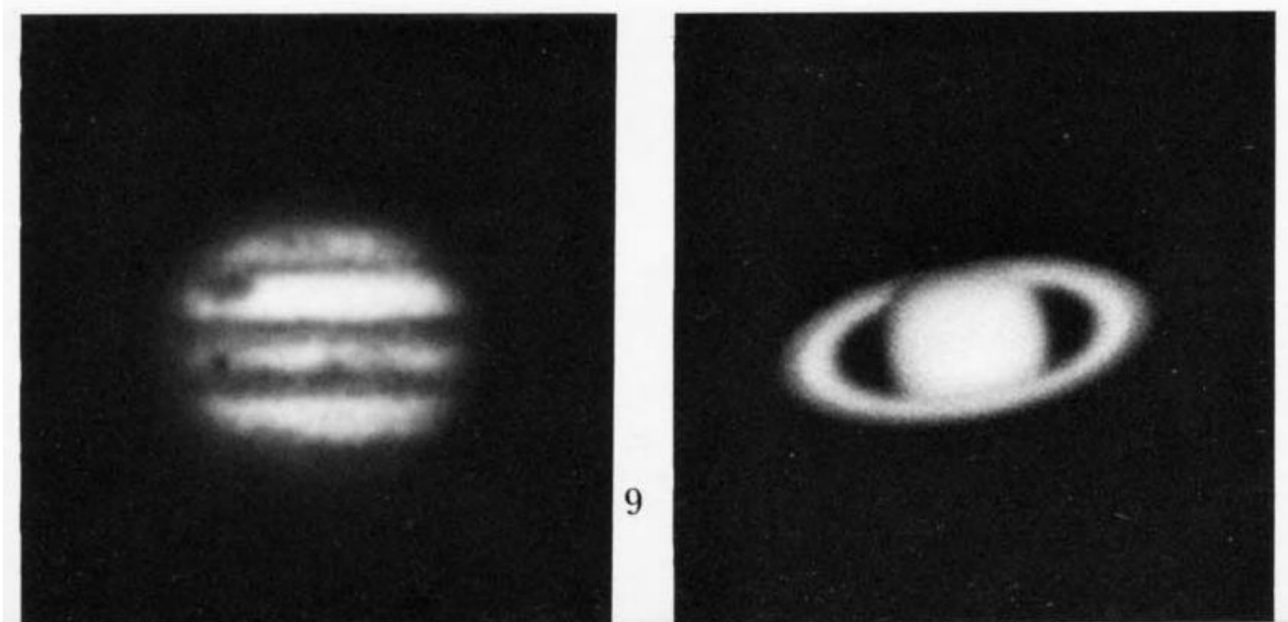


Figure 1. Jupiter and Saturn photographed by Robert Richardson. Jupiter at 9 sec. exposure, f-47, using high contrast copy film. Saturn 8 second exposure at f-80.

Knowledge about how to do astrophotography in those pre-internet days was often passed from individual to individual, or through presentations like this at various amateur astronomer gatherings or meetings. Quite a few LVAAS members at the time were accomplished astrophotographers.

The Questar Company has been in business in New Hope, PA since 1950. Founded by Lawrence and Marguerite Braymer, they ran the business for the first several decades of its existence. Their classic 3.5-inch Maksutov-Cassegrain telescope has been essentially unchanged since its introduction over 70 years ago. In 1977, there was a bitter shakeup in the Questar Company, and Richardson was among those who decided to leave the company. He partnered with Questar's Vice President, John Schneck, explaining that he thought a new company could be formed to compete with Questar. Together they Formed Optical Techniques Inc. (OTI) in 1976, headquartering in Newtown, PA, just ten miles from Questar.



Figure 2. Robert Richardson.

Schneck and Richardson believed that OTI could improve on the Questar product line by using the best of the Questar concepts, outsourcing some components, and eventually making improvements in design and features. Rivaling the Questar telescopes in terms of optical design, aperture, and some convenience features, the OTI instruments were initially made to a similar quality as the Questar. They attempted to undersell Questars as well, but the result was that before long, they were losing about \$200 per telescope. By 1980, OTI had discontinued operations, losing out to Questar. Schneck went on to establish Davro Optical Systems, a firm which offered Maksutov-Cassegrain optics-based systems to government and industry.

Richardson settled in Bethlehem Township. He passed away on October 19, 2020 at the age of 79. In addition to being an avid astrophotographer, he enjoyed chess and golf, and wrote extensively about the Delaware Bay watershed area in a collection called "Delsea – The Bay and Beyond," published in 2002.

References

The Observer, July 1972.

Optical Techniques, Inc.: A Brief History of a Brief Company.

<http://www.company7.com/library/quant6.html>

Robert Richardson Obituary:

<https://www.legacy.com/us/obituaries/mcall/name/robert-richardson-obituary?id=7915722>



StarWatch

Tau Herculids: *I Drove All Night*

One of my absolute favorite music videos is Céline Dion in concert singing, “I Drove All Night” ([here.](#)) When I’m watching it, I’m not part of the audience waving my hands back and forth imitating the fast tempo of the music, but I’m Céline, wondering what it must feel like to hold captive 30,000 people who have come from hundreds of miles to see me, and then giving them the adrenalin rush of their lives. • As a teacher who is starting his fifth decade in front of students in the fall, I normally return from class on the evenings that I teach with a mini-Céline rush. My students aren’t waving their hands back and forth to the tempo of my teaching, but the rush is nevertheless real. It usually takes two to three hours and a glass of red wine to calm me down before my 1 a.m.-2 a.m. crash time. • In a real sense I was Céline Dion, pumped about the Tau Herculid meteor shower that I witnessed on the evening and morning of May 30/31. No, there wasn’t a storm, a thousand or more meteors visible per hour, but there is no doubt in my mind that the shower existed and was active, and I and others witnessed it for the first time. In a three-hour stretch of continuous observing, I viewed 17 Tau Herculids radiating very near to the bright star, Arcturus. About six of them were bright, Big Dipper stars bright to brighter than Arcturus, the brightest star north of the celestial equator and the radiant from which the meteors were diverging. As predicted, they were slow, taking their time to traverse relatively short distances before they ablated (disintegrated) in Earth’s atmosphere. I remember seeing one orange meteor low in the south, and my good friend Bill Jacobs, living in Wellfleet, Cape Cod, commented that he had seen

the most orange meteor of his observing career. He saw eight Tau Herculids in a 45-minute observing stretch. • Most of the shower events were singular, one meteor at a time with a substantial break of activity in between them, but two Tau Herculids burned in close to each other and virtually at the same time. That’s an indication that they may have come from the same particle which broke up in orbit, a phenomenon in meteor science known as “bunching.” • When Moravian astronomer, Peter K. Detterline in Douglasville, PA analyzed his meteor camera data, his numbers totaled 34 Tau Herculids: 15 from 11 p.m.-midnight, EDT; 9 from midnight to 1 a.m.; 6 from 1 a.m. to 2 a.m.; 3 from 2 a.m. to 3 a.m. and 1 Tau Herculid from 3 a.m. to 4 a.m. See an image of a Tau Herculid meteor that Pete caught ([here](#)) • The Tau Herculids originate from periodic Comet 73P/Schwassmann-Wachmann 3, a small disintegrating, dirty snowball, less than a mile wide, which suffered major disruptions when it rounded the sun in 1995. It orbits Sol every 5.4 years and comes nearest to the Earth every 16 years. The fact that 73P/Schwassmann-Wachmann 3 was literally falling apart gave credence for the meteor storm, but like so many events, it was overplayed by some professionals as well as the media. It would have been better to plan for the worst and hope for the best. The worst would have been a “no show,” with the cometary dross missing the Earth completely. However having said that, keen observers from all over the US and the world witnessed a minor meteor event, but the **first** meteor shower from this comet, a Céline Dion moment for amateurs and professionals, with the stars silently cheering us on. 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](#)



2022/05/31 - 139 Meteors

62 Non-Meteors

Night Stacks



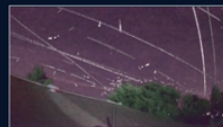
Cam #010085 1440 minutes



Cam #010086 1440 minutes



Cam #010087 1435 minutes



Cam #010088 1440 minutes



Cam #010089 1440 minutes



Cam #010090 1440 minutes



Top: A Tau Herculis meteor, captured by Peter K. Detterline's meteor cameras (*left*) located in Douglassville, PA.

Center: The six meteor cameras capture all motion, including meteors, airplanes, satellites, lightning bugs, etc. These are stacks from each camera for May 31, 2022.

According to Peter, airplanes are long lines, sometimes dashed if the lights are blinking, while meteors tend to be very short, sometimes getting brighter in the middle, or at the very end.

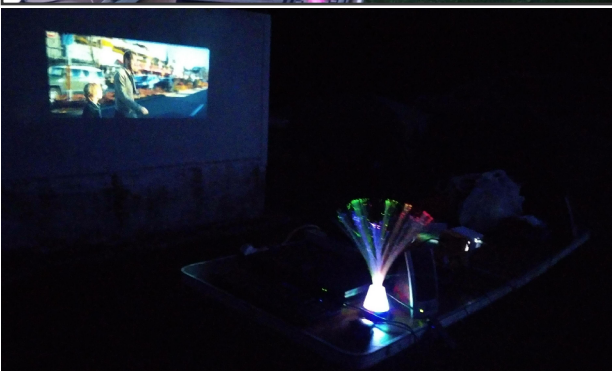
Images courtesy of Peter K. Detterline

Father's Day, Astronomy-Style

by Claudio Stabile



On Saturday June 18, 2022 I took my family for an overnight campout at Pulpit Rock after both Boy Scout troops that I was scheduled to host for the weekend decided to change their plans. We brought a small BBQ for hamburgers and hot dogs, and set up a projector to watch *The Adam Project* film projected onto the 12" Meade observatory exterior wall. The plan was to set up camp, cook for my family, and as they watched the film, test out the new technology on the updated 17.5" Odyssey 2 Dobsonian. In the morning, I planned on setting up the Tinsley telescope at 4:00 a.m. to observe the lunar and planetary show. I was curious to see who would join me this early!



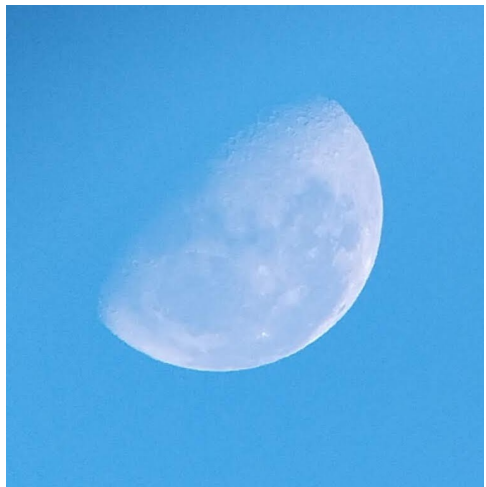
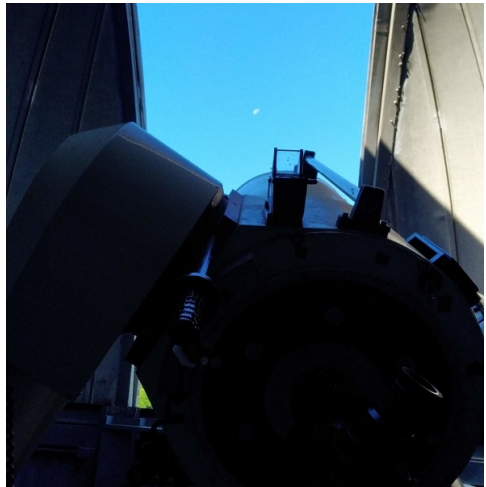
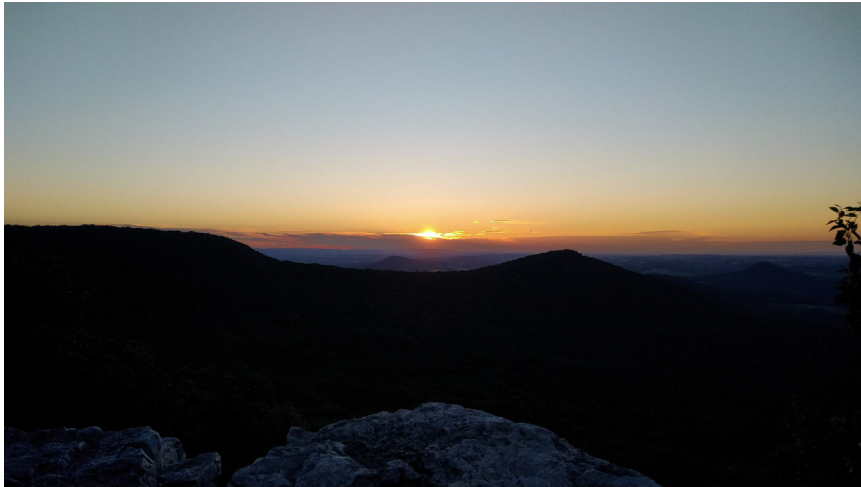
Saturday night was very dark and as the family watched the film, I had an opportunity to test the 17.5" Odyssey 2. Though I had early success with my phone, after losing connection I could not reconnect to the telescope. Good thing I just freshened up on star hopping and was able to utilize it to find some globular star clusters, and by good fortune see Pluto for the first time (a tiny pin dot that looked like a dim star.) When I found something really interesting the older kids took a quick look.





It was very windy all night and I couldn't sleep. Though I set my alarm for 3:55 a.m., I got bored of trying to sleep and started opening the Tinsley observatory at 3:00 a.m. My 15-year-old son couldn't sleep either and decided to join me. We started viewing Saturn, the Moon and Jupiter with the Tinsley and Odyssey 2 and were having a great time. Soon, my 13-year-old daughter joined in, and so did my wife. We observed Saturn, the Moon, Jupiter and Mars. I tried to get my 6-year-old son to join in, but he just wanted to get back to his cozy tent.

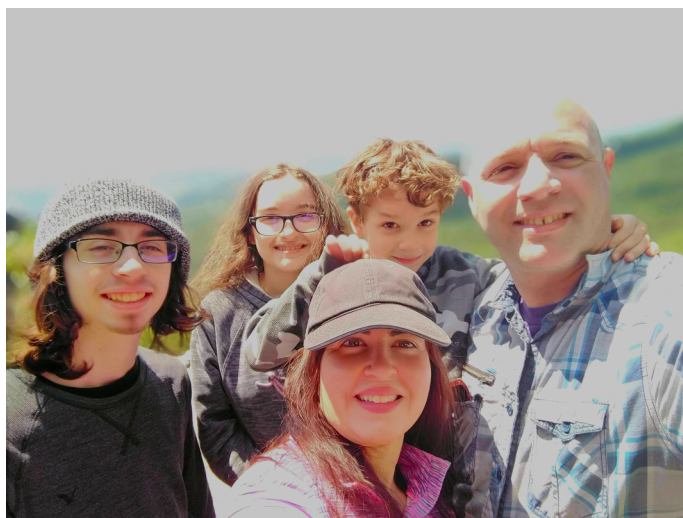
At about 4:45 a.m., my teenagers wanted to see Venus, but the trees were covering it from the campsite. We went to the Pulpit Rock overlook and were able to view Venus with binoculars. We sat and waited for the Sun to rise at 5:32 a.m. It was a special moment and a wonderful start to Father's Day.





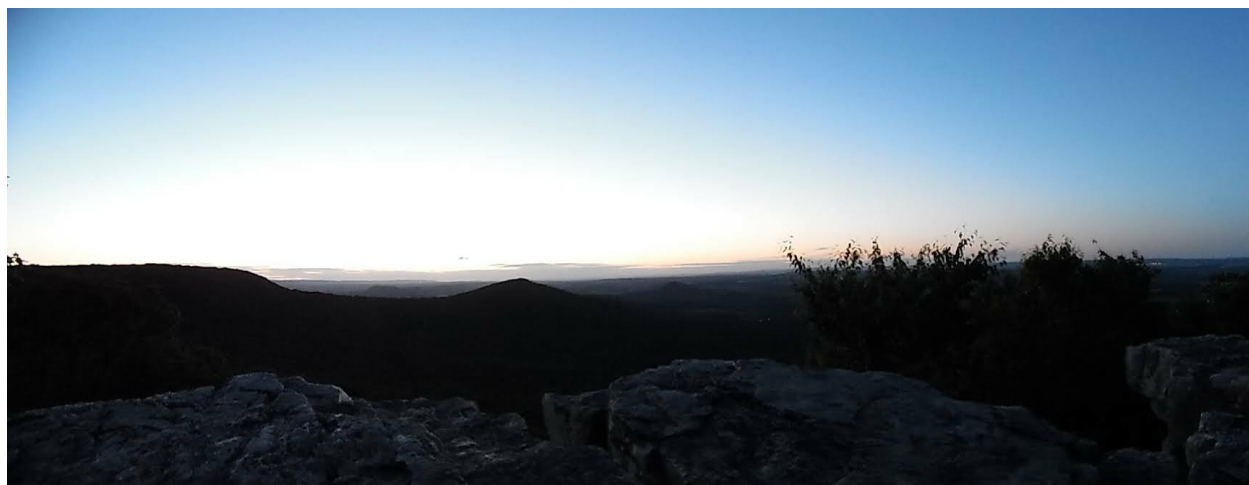
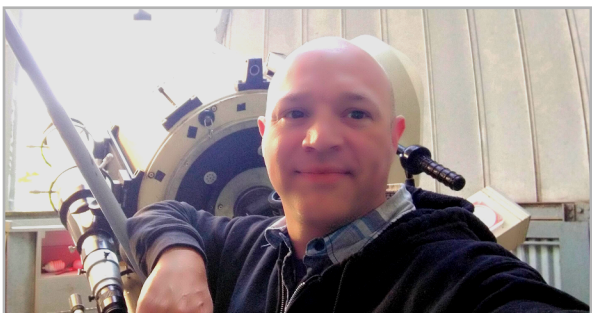
We had a BBQ breakfast and I still had the Tinsley tracking the moon. It continued to be visible throughout the morning, allowing me to show several hikers a view of the Moon, and share conversations about the Tinsley and LVAAS membership. I encouraged several individuals and families to photograph the LVAAS sign for the website and further information. Ron Kunkel stopped by with his family as they were deciding what type of hike they would embark on.

We kept the Tinsley open until we were all finally packed. Then I closed all the buildings and left with my family.



I hope you all had a wonderful Father's Day weekend - it was truly a remarkable one for me!

- Claudio Stabile



JULY 2022

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					01	Star Party 02
03	Independence Day 04	05	06	First Quarter Moon 07	08	General Meeting/Picnic - 5:00 PM 09
General Meeting (rain date) - 7:00 PM 10	11	12	Full Moon 13	14	Scout Camping at Pulpit Rock 15	Scout Camping at Pulpit Rock 16
Scout Camping at Pulpit Rock 17	18	19	Last Quarter Moon 20	21	22	Astro Imaging at SM 7pm 23
Deadline for submissions to the Observer 24	25	26	27	New Moon 28 Stellafane	Stellafane 29	Stellafane 30
Stellafane 31 LVAAS Board of Governors Meeting						

AUGUST 2022

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	01	02	03	04	First Quarter Moon 05	Star Party 06
07	08	09	10	11	Full Moon 12 Scout Camping at Pulpit Rock	Scout Camping at Pulpit Rock 13 Astro Imaging at SM 7pm
Scout Camping at Pulpit Rock 14	15	16	17	18	MegaMeet at PR 19 Last Quarter Moon	MegaMeet at PR 20 General Meeting Pulpit Rock - 7:00 PM
MegaMeet at PR 21 Deadline for submissions to the Observer General Meeting Pulpit Rock (rain date) - 7:00 PM	22	23	24	25	26	New Moon 27
LVAAS Board of Governors Meeting 28	29	30	31			

Sky Above 40°33'58"N 75°26'5" Sunday, July 10, 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/>

2022 LVAAS EVENT CALENDAR

Contributed by Bill Dahlenburg

2022 LVAAS Event Calendar												
	Sundays				Saturday	Saturday	Monday	Multi-Day	Moon Phase			
	General Meeting time	Date/location	Board meeting	Observer submission deadline	7:00 PM Astro Imaging	Star Parties	Scouts at S. Mountain	Weekends 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
 August 19-21

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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