

The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society
<https://lvaas.org/>

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

July 2020

Volume 60 Issue 07





ad astra *****

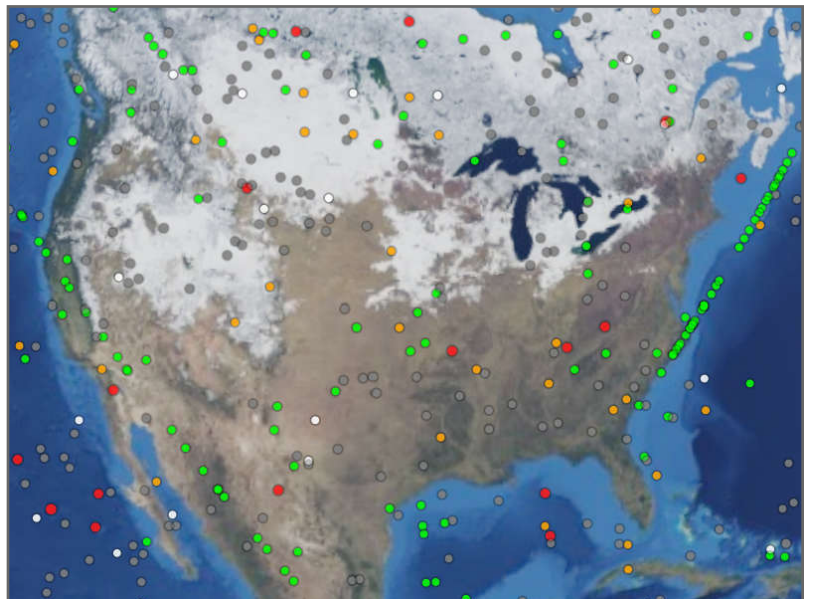
Somebody fired a burst of tracer bullets from a giant, interplanetary artillery gun, almost right over my head. They were aiming at Planet Earth, but they just missed! It was one of the freakiest things I have ever seen in the night sky. The impression was that the projectiles were moving in a straight line, not too far up but coming from very far away. As they appeared over the horizon, they were closer together in my sight and dimmer, and as their path took them over me, at about 35 degrees altitude, they brightened (to within a magnitude of Mars, one way or the other) as the perspective shift drew them farther apart; and then closer again, as they faded into the opposite distance. All as silent and as smooth as any celestial occurrence, though much quicker.

This was quite recently, at about 4:15 a.m. on June 16. They were not moving in a straight line, of course, but in a circle of about 13,000 km diameter; low-Earth orbit. They were the batch of satellites known as Starlink 8, deployed in the June 13 launch of a Falcon 9 rocket by SpaceX. The satellites are maneuvering using their ion thrusters, slowly separating and raising themselves to higher orbits.

They will still be viewable once they have been up for a few weeks, but they'll have become dimmer and hard to find. I watched a few from a previous launch pass through Cassiopeia one evening about a month ago, after using heavens-above to find out where to look, and when. Depending on how much the birds are maneuvering, the website can do a great job of predicting where they will be, down to a few minutes of arc and a few seconds on the clock. I was barely able to see them with my binoculars, because I was not in a really dark location, it was a few hours after sunset, and they were low in the sky.

Earlier after the launch, the predictions are not as accurate, but you don't need binoculars. You just need to have your eyes on the right part of the sky at the right time. I would start watching about 5 minutes early, although in my latest observation that wasn't needed.

CelesTrak is another website that can tell you where satellites are, but they don't predict ground visibility so much as give a global picture. Here is a detail from their Orbit Visualization tool, which doesn't seem to work in every browser, but is a lot of fun to play with when it does. The image shows the train of Starlink 8 satellites moving up along the east coast, as they were on the night I saw them, while an earlier batch are passing over the west coast of the U.S. and Mexico. All of the other little dots are satellites, too, put in space over the years by other companies and nations. CelesTrak has information in its database for more than 20,000 objects currently orbiting Earth.



The big question about Starlink, of course, is what does it mean for astronomy?

There is certainly room for concern, but I think there is also room for optimism. As Sandy Mesics recalled for us in last month's Observer, astronomers were worried about pollution of the night sky from too many satellites as early as 1961.

SpaceX has applied for permission to launch up to 42,000 Starlink satellites, or about one per square degree of the night sky, roughly tripling the number of objects already in Earth orbit. If that happens, they will be a nuisance, for sure. Visual observers will notice them for a few hours after sunset, and astroimagers will need to develop ways to remove them from their exposures. I don't know enough to evaluate how it would affect professional ground-based astronomy. But although it would be annoying and require some effort to compensate, somehow I have a hard time believing it will be a catastrophe. A satellite pass can ruin a few percent of the pixels in any given exposure, but most final images are the result of many. Between the ability to know in advance exactly where the satellites are (once they are in their production orbits) and the ability to post-process the images, I think there is room for a lot of hope that we will be able to work around this.

On the other hand, we should consider the need that this project serves. Here in the Lehigh Valley we are close to the major Internet backbones and the big population centers, and most of us have excellent high-bandwidth service from two different networks (the ground-based providers and the cellular companies) at all times. We take it for granted, but there are plenty of people living in remote areas who are deprived of decent connectivity.

Also, SpaceX has more credibility than anyone else in pursuing a goal that almost every space enthusiast ought to love: placing human beings on another planet. Currently, only three entities on Planet Earth are capable of launching human beings into space: Russia, China, and SpaceX. Although he seems disturbingly reckless at times, Elon Musk has accomplished things that few thought possible, and I wouldn't bet against him achieving his stated desire to spend the last years of his life on Mars.

So, I'm not quite ready to condemn the Starlink effort. I'll keep my eye out for opportunities to observe the Starlink 8 fleet before it climbs much higher, as well as the Starlink 9 batch which is scheduled to launch before the end of June. I'm just a sucker for a good show in the sky.

There is a video at <https://www.dailymotion.com/video/x7ukvtc> that captures a fairly good impression of what I saw the other night; in particular, the very end starting at about 1:43.

In other news...

As eager as I was to get back to work on the 40-inch, it didn't happen. As soon as I was done with my presentation for the June General Meeting, I had to deal with a plumbing emergency in my home. Replacing a lavatory sink turned into a major time sink. As a result, there will be no Schlegel Observatory Report this month.

Tomorrow is another day. Ad Astra!

— *Rich Hogg*

Minutes from the LVAAS General Meeting – June 14, 2020

The June 2020 LVAAS General Meeting was conducted electronically using an on-line service in an effort to adhere to the social distancing guidelines outlined by the Governor of Pennsylvania with regard to the COVID-19 pandemic. Approximately 20 people were in attendance. Director Rich Hogg opened the meeting at 7:10 p.m.

The evening's presentation was a demonstration of SpaceEngine by Rich. Below is a description of SpaceEngine from their website.

“SpaceEngine is a realistic virtual Universe you can explore on your computer. You can travel from star to star, from galaxy to galaxy, landing on any planet, moon, or asteroid with the ability to explore its alien landscape. You can alter the speed of time and observe any celestial phenomena you please. All transitions are completely seamless, and this virtual universe has a size of billions of light-years across and contains trillions upon trillions of planetary systems. The procedural generation is based on real scientific knowledge, so SpaceEngine depicts the universe the way it is thought to be by modern science. Real celestial objects are also present if you want to visit them, including the planets and moons of our Solar system, thousands of nearby stars with newly discovered exoplanets, and thousands of galaxies that are currently known.”

Rich took us through the site explaining how it works and how it was developed. He then took requests from the meeting attendees to go to specific destinations. It is a unique way to view the known universe and observe objects from differing views that could not be done on earth or even from space telescopes. After the demonstration concluded, the meeting moved to LVAAS business.

Membership: Gwyn Fowler

2nd Reading:

Brett Fadem

1st Readings:

Mike Boyle

Bill Malkames

Treasurers Report: Scott Fowler

2020

General Fund Balance \$50,398.64 as of May 3rd

Income \$484.78

Expenses \$(731.29)

General Fund Balance \$50,152.13 as of June 14th

General Comments:

Pulpit Rock Observatories – Rich Hogg

Rich asked everyone who had not already participated, to participate in the Paint the 40” Project. You are encouraged to go to the LVAAS site and select colors for the different parts of the 40”.

Book Club – Blaine Easterwood

Currently reading The Big Picture. Planning another get-together soon.

UACNJ Representative - Earl Pursell

There was a UACNJ meeting. The site has asked for suggestions on how to go about re-opening. Invites will be sent before events to estimate attendance. Currently working with limited resources. Observatories will not be accessible and you must be an observer in order to go.

Next General Meeting:

The July 2020 General Meeting will be conducted electronically on July 11 at 5 p.m.

The link to the May general meeting is <https://www.youtube.com/watch?v=6jS9t3lp-uw>

The meeting was adjourned at approximately 9:00 p.m.

Submitted by Dennis Decker, Secretary

UACNJ Reminder

LVAAS is a member organization of the **United Astronomy Clubs of New Jersey**, (uacnj.org) which means that LVAAS members may acquire observing privileges at the UACNJ observatories at **Jenny Jump State Park**, near Hope, NJ. There is a fee of \$50.00 per year, plus a commitment to assist at UACNJ Public Nights. Normally, this commitment is for five Public Nights during the year, but it has been reduced to four this year, due to the shortened observing season. The 2020 Observer Form can be found on their website: <http://www.uacnj.org/observers/2020ObserverForm.pdf>. LVAAS liaison is Earl Pursell.

Also check out the **Meteor Shower Calendar** courtesy of Ken Taylor of UACNJ and thrillist:

<https://www.thrillist.com/news/nation/meteor-shower-calendar>



Cover image: NGC6960, the Western portion of the Veil Nebula in Cygnus, AKA “The Witch’s Broom”. Imaged 2013 by David M. Moll, reprocessed 2019

LVAAS General Meeting

Saturday, July 11 at 5:00 p.m.

***** NOTE: *** FIVE O'CLOCK on SATURDAY *****

- Meeting will be held on-line -

Featuring

Tom Field, President

Field Tested Systems LLC

Contributing Editor, Sky & Telescope Magazine

“You Can Almost Touch The Stars”



Even if you wanted to touch a star, they're all impossibly distant.

Despite these great distances, astronomers have learned an enormous amount about stars. How? The most common method to study the stars is called spectroscopy, which is the science of analyzing the colorful rainbow spectrum produced by a prism-like device.

Until recently, spectroscopy was too expensive and too complicated for all but a handful of amateurs. Today, though, new tools make spectroscopy accessible to almost all of us. You no longer need a PhD, dark skies, long exposures, enormous aperture ... or a big budget! With your current telescope and FITS camera (or a simple web cam or even a DSLR without a telescope) you can now easily study the stars

yourself. Wouldn't you like to detect the atmosphere on Neptune or the red shift of a quasar right from your own backyard?!

This talk, with lots of interesting examples, will show you what it's all about and help you understand how spectroscopy is used in research. Even if you are an armchair astronomer, understanding this field will enhance your understanding of the things you read and the night sky. We'll do a live Q&A after Tom's 45-minute presentation.

Tom Field has been a Contributing Editor at Sky & Telescope Magazine for the past 7 years. He is the author of the RSpec software (www.rspect-astro.com) which received the S&T "Hot Product" award in 2011. Tom is a popular speaker who has spoken to hundreds of clubs via the web at many conferences, including NEAF, the NEAF Imaging Conference, PATS, the Winter Star Party, the Advanced Imaging Conference, SCAE, and others. His enthusiastic style is lively and engaging. He promises to open the door for you to this fascinating field!

*Members will receive an invitation to the on-line meeting by email. Prospective new members should contact our Membership Director (membership@lvaas.org) to arrange to receive an invitation.



Exciting, New, Live-Action Game!!!

RED SHIFT REVENUE

- **Operate an Astronomy Club Gift Shop!**
- **Optimize product lines!**
- **Purchase inventory!**
- **Manage production!**
- **Complete sales!**
- **Report revenue and expenses to the Board!**
- **Help a great organization do a valuable public service!**

As our LVAAS Member Services Director, you will enjoy the challenge of operating the Red Shift Gift/Snack Shop at LVAAS Public Star Parties.

The only way to lose is to not play!
Contact director@lvaas.org to sign up!

FOR SALE

CELESTRON C9.25 OPTICAL TUBE ASSEMBLY

LIKE NEW – IN BOX

\$1,100.00

CONTACT:

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9.25" Schmidt-Cassegrain Optical Tube Assembly (OTA)

Features Celestron's premium patented StarBright XLT optical coatings

2350mm focal length (f/10)

Fastar compatible

Tube constructed of durable and lightweight aluminum

Includes: 25mm eyepiece (94x), 6x30 optical finderscope, star diagonal, 1.25" visual back, CG-5 dovetail bar



IC 5146 – The Cocoon Nebula in Cygnus, 2015 image. David Moll and Michael L. Morgan combined preprocessed data from observing sites in Pennsylvania and New Jersey to make this deep image of “a cluster of 9.5 mag stars involved in a bright and dark nebula” (IGC description). Michael L. Morgan final processing. Copyright 2015 Michael L. Morgan and David Moll.



From the LVAAS Archives:

Kawecki Observatory Gets a Facelift

by Sandy Mesics

The June 1970 Observer reported that the Kawecki Observatory at Pulpit Rock would have a sheathing of aluminum added over the masonry walls to act as a heat shield, so that the walls would not absorb as much heat during the day. This was the same approach used by the Harrisburg Astronomical Society at their Naylor Observatory site.



LVAAS Director Ernie Robson (L) and Henry Kawecki (R) in front of Kawecki Observatory. Power came from a generator on site.

The Kawecki Observatory was Henry Kawecki's private observatory on Pulpit Rock, and when he donated Pulpit Rock to LVAAS in 1966, the observatory was part of the gift. In exchange for the property, LVAAS committed to the construction of an access road to the site. Before, access to the observatory was through an abandoned logging trail or via a helicopter, which Mr. Kawecki owned and piloted. Talk about a remote observing site!

Miraculously, Kawecki built this facility by hauling materials to Pulpit Rock via Jeep over the logging trail, or by helicopter, with the assistance of Carl Hein. The observatory is built of concrete block, so those blocks had to be hauled to the mountaintop, not to

mention the water, mortar, tools, and other sundry equipment. Legend has it, Kawecki broke an axle on one of these harrowing trips. Mike Spacek built the dome and equipped the observatory with a 12.5-inch Cassegrain telescope that he made. A few years later, when this telescope was removed for repair, Mike offered his 8-inch refractor as a loan and it was installed. It remains in service there to this day, an instrument particularly well-suited to lunar and planetary observing.

On July 5, 1970, LVAAS held its general meeting, picnic and work party at Pulpit Rock. About 30 folks attended. The weather was reportedly pleasant. Work parties at Pulpit Rock



June 14, 1970: re-siding Kawecki Observatory

were usually headed by Ralph Schlegel, Bill McHugh and Paul Shenkle. Work continued on the Schlegel-McHugh Observatory as well as the refurbishment of the Kawecky Observatory. Work parties also cleared large rocks from the road, filled in ditches, removed underbrush, and removed trees that were cut down in 1967.



Kawecky Observatory July 1970

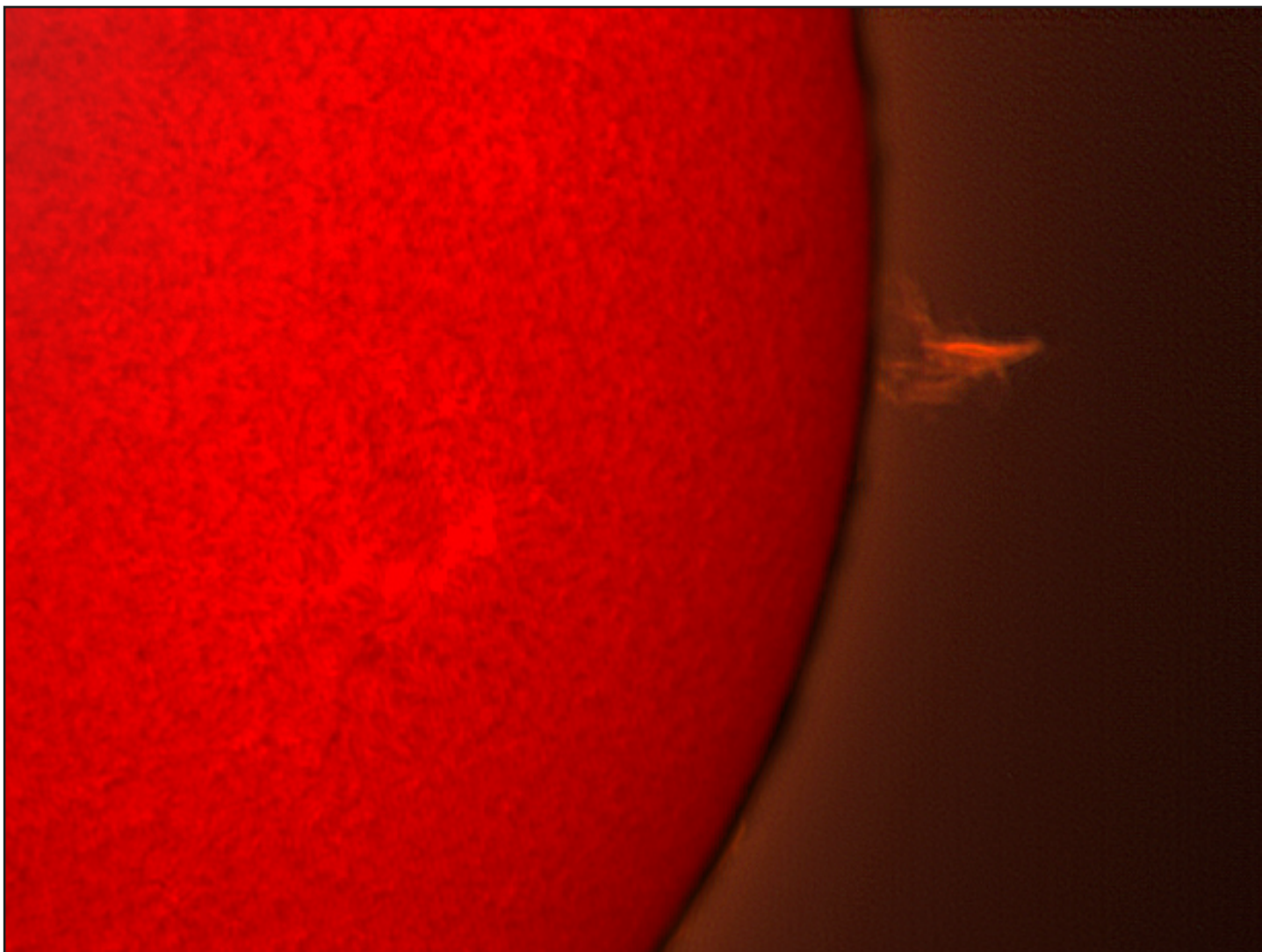
The July meeting focused on a proposal from New York-Penn Microwave Company to lease LVAAS's right of way for access to a microwave relay station. After serious negotiations and some research into whether such an arrangement would affect our non-profit status, LVAAS did grant access for \$1300 a year for an initial term of 10 years. Over the years, New York-Penn became Eastern Microwave, then American Tower. This proved to be a very prudent decision, as those funds, which have been renegotiated over the years, have been a main source of income for the Society.



Pulpit Rock July 26, 1970 from Schlegel-McHugh Observatory



Essential maintenance activities continue at LVAAS's South Mountain headquarters during the easing of restrictions during the COVID19 pandemic. Above, Earl Pursell and Pete Brooks work on a fan from inside and outside the Brooks Observatory. Left, Bill Dahlenburg helps a member with a rental telescope. The men can usually be found working on whatever needs doing at this location on Saturday mornings between 9 a.m. and noon. Thanks for all your hard work and dedication, guys!



Solar prominence 5/25/20. Composite of two exposures taken with a Coronado SolarMax 40 and Imaging Source video camera. Processed with RegiStax 6 and Photoshop. Approximately 800 frames for each exposure. One exposure for surface detail and one exposure for the prominence.

Image courtesy of Bill Dahlenburg.

by Gary A. Becker



Comets Are Like Cats...

...they have tails, and they do precisely what they want.” Recent comets, Atlas (C/2019 Y4) and SWAN (C2020 F8), both “crashed and burned” as the saying goes, but there is a new comet on the block. Perhaps the third, Comet NEOWISE (C/2020 F3), discovered in March of this year, will prove to be the lucky charm.

As I write these words, NEOWISE is rounding the sun at its closest approach. The strange name is an acronym for NASA’s Near-Earth Object Wide-field Infrared Survey Explorer, another satellite among a growing fleet of orbiters and Earth-based telescopes looking for space debris that may hit the Earth. Unlike the crumbling and humbling end of Atlas and SWAN, NEOWISE appears to be holding together and brightening. Astronomers expect it to remain intact after perihelion and appear low in our northeastern sky at dawn later this week, pending no abduction by a large alien spacecraft looking for an easy source of water. Photographed in bright twilight on July 4 with a condensed coma and a short tail, NEOWISE represents a hopeful sign that finally the Northern Hemisphere is getting treated to a naked eye comet worthy of some sleep deprivation.

One reason why these recently anticipated comets have been so fickle is that they are all long period gate-crashers. Structural differences and dissimilar dust to ice ratios affect the manner in which a comet appears in the sky. Comets also come in two basic orbital varieties, long and short period, the dividing time frame being 200 years. Those with shorter orbital periods are classified as short period comets, while those with greater orbital intervals get to be called, you guessed it, long period comets. Short period comets come from an area of the solar system known as the Kuiper Belt, that extends from the orbit of Neptune to about 55 times the distance from the Earth to the sun, 55 astronomical units (AUs). These comets have been tamed by the gravitational tugs and pulls of the gas giant planets into orbits which are relatively close to the plane of the solar system and into orbital paths that move in the same direction as all of the planets.

Short period comets have seen numerous successful passages around the sun, and through repeated trials by fire have been structurally strong enough to survive the blast furnace that is the sun. Comets like Atlas, SWAN, and NEOWISE, were entering the inner solar system from a spherical halo of similar objects called the Oort Cloud. It is thought to be composed of trillions of icy objects at much greater distances from the sun, perhaps up to two light years, where the gravitational perturbations of passing stars can gently nudge a comet sunward to meet its first encounter with Sol.

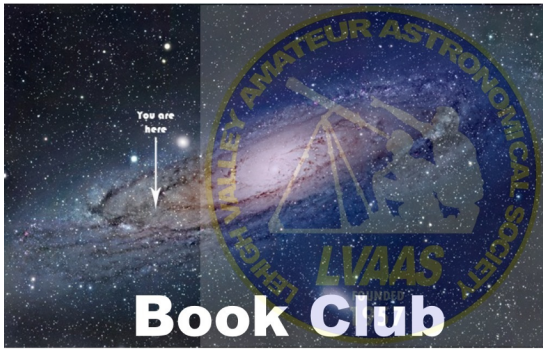
Unfortunately, both Atlas and SWAN failed the test of first passage because their icy structures were too friable, but NEOWISE seems to be holding together. You should be able to catch it by Tuesday, July 7, about 5 degrees above the northeastern horizon under the star Capella, the brightest luminary in that direction and the sixth brightest star of the nighttime sky. You should be at your observing site by 4:30 a.m. Bring binoculars if you have them because, as we all know, comets can be like cats.

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astronomy.org facebook.com/StarWatchAstro/



Night Sky Notebook for
July
by
Peter Detterline





Looking for something to read?
Looking to share the experience
with fellow LVAAS members?
Join our book club!

Here's the Plan:

Step One: Express your interest. If you are interested, let me know either in person, or via email: blaine@ieee.org. I will add you to our private Facebook group. If you don't have Facebook, let me know, we can setup an email list and communicate that way too.

Step Two: Choose a book. We will do this via our private Facebook group and email (if there are any who do not use Facebook.) So far the following are in the running:

1. The Big Picture, by Sean Carroll (*current choice)
2. Astrophysics for People in a Hurry, by Neil deGrasse Tyson
3. Moonshot: What Landing a Man on the Moon Teaches Us About Collaboration, Creativity, and the Mind-set for Success, by Richard Wiseman
4. The Trouble with Gravity: Solving the Mystery Beneath Our Feet

Step Three: Set the meeting schedule. Our plan is to meet in the library, but we can augment that with online conversations.

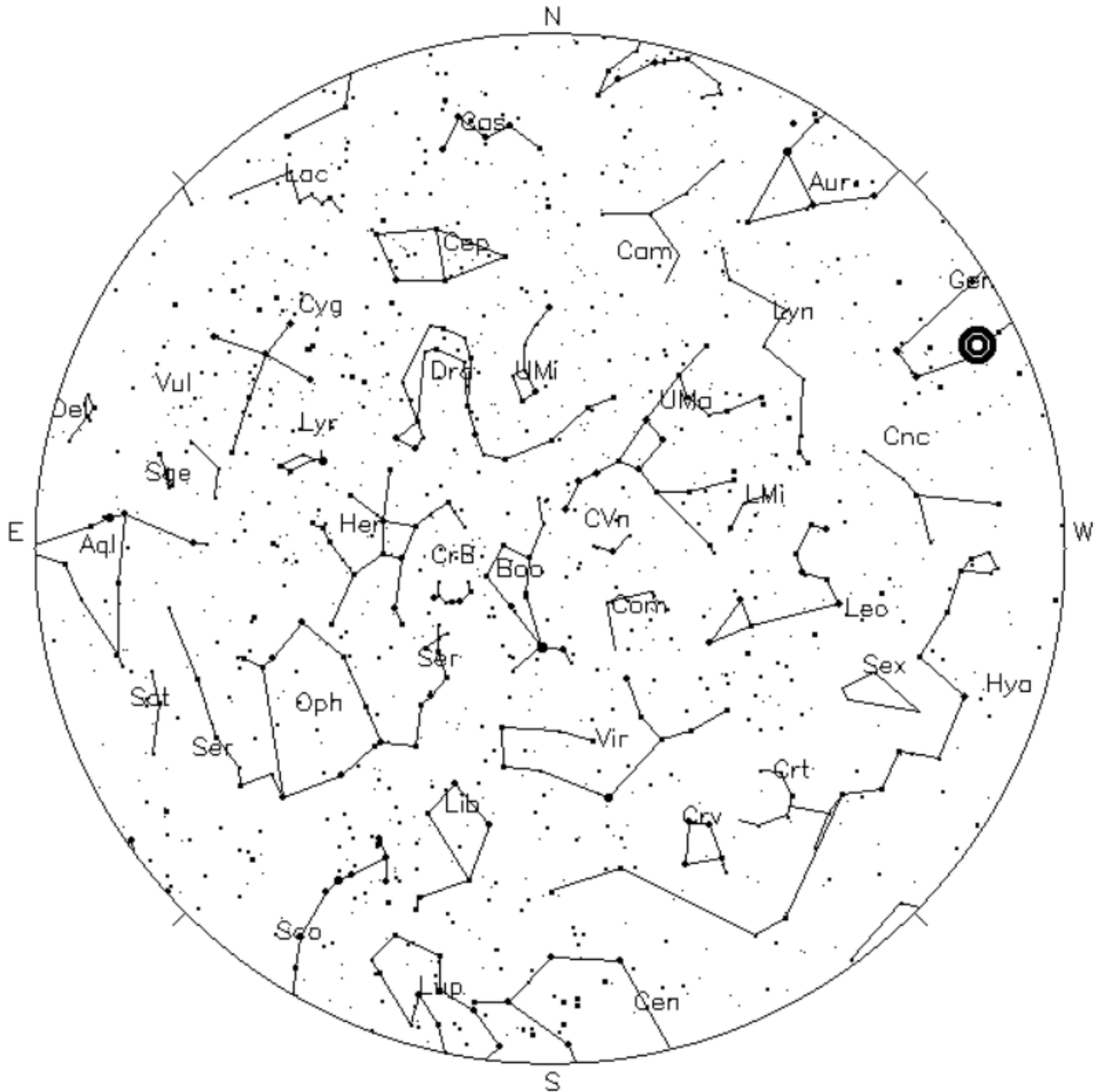
Step Four: Read, enjoy, discuss, and learn! We can do this both in-person and through online discussions.

This is the first time we are doing this, so I consider it "experimental." I am completely open to suggestions and changes as we go.

Thank you!

Blaine Easterwood, Education Director

Sky above 40°33'58"N 75°26'5"W Thursday July 09 2020 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/>

JULY 2020

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

AUGUST 2020

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

2020 LVAAS Event Calendar

** Due to the COVID pandemic, please see the website for updates on all events*

2020 LVAAS Event Calendar												
	Sundays				Thursday	Saturday	Mondays	Multi-Day Weekends	Moon Phase			
	General Meeting time	Date/location	Board meeting	Observer submission deadline	Astro Imaging	Star Parties	Scouts at S. Mountain	Scouts at Pulpit R.	New	First	Full	Last
January	2:00 PM	12 Muhlenberg	26	19	16	no mtg		no camping	24	2	10	17
February	2:00 PM	9 Muhlenberg	23	16	13	no mtg		no camping	23	1	9	15
March	2:00 PM	8 Muhlenberg	29	22	12	7		6 – 7 – 8	24	2	9	16
April	7:00 PM	5 S.M.	26	19	18	4		10 – 11 -12	22	1 30	7	14
May	7:00 PM	3 S.M.	31	24	16	2		8 – 9 – 10	22	29	7	14
June	7:00 PM	14 S.M.	28	21	13	27		5 – 6 – 7	21	28	5	13
July	5:00 PM	11 S.M.	26	19	18	25		3 – 4 – 5 31	20	27	5	12
August	7:00 PM	8 Pulpit	30	23	15	22		1 – 2	18	25	3	11
September	7:00 PM	13 S.M.	27	20	12	26		4 – 5 – 6	17	23	2	10
October	7:00 PM	11 S.M.	25	18	15	24		2 – 3 – 4 30 – 31	16	23	1 31	9
November	7:00 PM	8 S.M.	29	22	12	21		1	15	21	30	8
December	**	12	27	20	10	no mtg		no camping	14	21	29	7

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 ** check website for time

NEAF
 Cherry Springs S.P.
 Stellafane
 Black Forest S.P.
 MegaMeet

April 4 – 5
 June 18 – 21
 Aug 13 – 16
 Sept 18 – 20 (not confirmed)
 May 22-24

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, Frances 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 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. Every attempt will be made to include submissions in a timely manner.

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

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