

The Observer

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

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

March 2021

Volume 61 Issue 3





ad astra *****

You might think that not much has been happening at LVAAS due to the pandemic. If you do, you have been wrong. Besides our monthly General and Board meetings a lot has been happening behind the scenes by your officers and Board members to keep LVAAS operating. I thought it important to highlight the hard work being done by these dedicated volunteer individuals for LVAAS.

Bill Dahlenburg has been keeping our clubhouse safe during the several snowstorms we have experienced with an accumulation of over 30 inches impacting our South Mountain site. We had hoped to avoid plowing South Mountain this winter as we are not using the facility for meetings, however, our heating oil was running dangerously low. We had to call McAullife Paving to plow a single lane from the AT&T road around the planetarium and back out.

Dave Moll has decided to step down as our Risk Management Director. Eric Loch has volunteered to assume this position, which involves interacting with our insurance provider, interacting with the local fire companies and municipalities to assure LVAAS is protected, and helping our Key Masters (Earl Pursell and Frank Lyter) keep track of the many keys the club issues and tracks in a key database on the LVAAS' Google Drive.

Gwyn Fowler and Frank Lyter have set up a Paypal account to allow membership and donation transactions much easier for our members.

Rich Hogg is in the process of updating our website to allow members to contact us if they want to volunteer and how to initiate that contact. Additionally, Rich has created an email to use for our Paypal account and is working on adding a "Donate" button or link for people to use the PayPal option. Rich has also set up an LVAAS Zoom account and provided access to the officers and fixed a bug in the website Calendar module that resulted in erroneous display of the monthly calendar for certain settings.

Ron Kunkel has ordered a device that allows you to start up a Meade LX200 Classic without the hand controller attached to the telescope. You then would be able to operate the telescope through its RS232 port and a laptop computer running some planetarium software. This would require the purchase of an RS232 interface.

Our Librarian Dave Raker has been busy creating DVDs of our General Meeting talks. The following talks are now available on DVD:

- Earl Pursell: Explorer's Guide to the Solar System
- Pete Detterline: Comet NEOWISE
- Mary Lou West: The Life of a Star
- Eric Loch: Cherry Springs State Park
- Robert Vanderbei: Astrodynamics

Bill Malkames, our new Light Pollution Director, has been busy assessing the light pollution at South Mountain. Our goal is to preserve our site to assure long-term good seeing and observing at the site.

Lastly, we have set up a small working group to revise the LVAAS By-Laws.

AdAstra!

Thomas Duff

Minutes from the LVAAS General Meeting – February 14, 2021

The February 2021 LVAAS General Meeting was conducted electronically using an on-line service in an effort to adhere to the social distancing guidelines with regard to the COVID-19 pandemic.

Approximately 30 people were in attendance.

Director Tom Duff opened the meeting at 7:05 p.m.

The General Meeting's presentation was Astro Dynamics: Fun with M1, M13, M27, M51, and Betelgeuse by Robert Vanderbei.

Robert first became interested in the stars in the summer of 1963 when he was 7 years old and the family made a camping trip around Lake Superior. He woke up in the middle of the night, went outside the tent, looked at the sky, and was astonished by the beauty of the stars. He was an active amateur astronomer until his High School years, and returned to the hobby at about the turn of the century. He has been an active astrophotographer since shortly thereafter.

Robert has a BS in Chemistry at Rensselaer Polytechnic Institute (RPI) and a PhD in Applied Math at Cornell and worked at AT&T Bell Labs' Math Research Center in Murray Hill NJ before joining Princeton University in 1990. During his career he contributed to designing a NASA space telescope to image Earth-like planets.

Since 2005 his amateur setup has included a Takahashi FSQ-106N and a 10" Ritchey-Chretien telescope from RCOS. He has had the pleasure of taking many astrophotos from the driveway of his home just 8 miles north of Princeton.

He's also co-written a book with J. Richard Gott entitled "Sizing Up The Universe". It was published by National Geographic.

Treasurers Report: Gwyn Fowler

The General Fund balance at the last meeting was \$39,347.12. Income to the General Fund since then was \$1,183.83 and expense was \$539.57. The new General Fund balance increased to \$39,991.38. Here is a summary of the General Fund account.

Fund Activity Since Last Meeting (amounts in dollars).

| | 10 Jan 2021 | Income | Expense | 14 Feb 2021 |
|---------|-------------|----------|---------|-------------|
| General | 39,347.12 | 1,183.83 | 539.57 | 39,991.38 |

The income this fiscal year from members is \$5,742. We hope to reach a goal of \$8,500 by the end of September. The board approved a \$310 increase to this year's budget to cover the cost of a safe for Society documents. This item was budgeted in the previous fiscal year, but the actual purchase occurred at the beginning of this fiscal year. The safe eliminates the need to maintain a bank safe deposit box and will save the society \$75 annually in bank fees. Here is a summary of the current budget.

FY 2021 General Find Budget (amounts in dollars).

| | Budget | Actual |
|---------|-----------|-----------|
| Income | 20,000.00 | 6048.41 |
| Expense | 26,415.00 | 2,681.92 |
| Net | -6,415.00 | +3,366.49 |

Membership: Gwyn Fowler

2nd Readings:

- Stephen Straka Jr.
- Fred Moskowitz

1st Readings:

- Leslie Moskowitz
- J.P. Neubert
- Logan Kramer

General Comments

A PayPal account has been created for LVAAS to provide an on-line payment solution for paying membership dues, making donations, etc. Thanks to Gwyn and Frank for getting this set up.

A Zoom account has been created for LVAAS to allow for additional on-line meeting capabilities beyond the General Meetings and Board of Governors Meetings. Thanks to Rich for getting this set up and for allowing us to use his Zoom account prior to the new LVAAS account being created.

Next General Meeting

The next General Meeting will be Sunday, March 14th, 2021 and will be conducted electronically.

The February General Meeting was recorded.

The meeting was adjourned at approximately 8:30 p.m.

New Member Application

LEHIGH VALLEY AMATEUR ASTRONOMICAL SOCIETY



Make checks payable to: LVAAS

Mail your completed application(s), with your dues to:

**LVAAS MEMBERSHIP
c/o Gwyn Fowler
97 Yeager Road
Lenhartsville, PA 19534**

Name: _____ Are you age 18 or older? Yes ____ No ____

Address: _____ City: _____ State: ____ Zip: _____

Email Address: _____ Phone Number: _____

Occupation (Optional): _____

Where did you first hear about LVAAS? _____

Specific Astronomical Interests: _____

Are you a member of other Astronomical Societies? _____

Please list any astronomical instruments owned: _____

Experience in Astronomy (circle one): **Novice** **Amateur** **Advanced Amateur** **Professional**

Type of Membership (circle one):

Full-time student: \$15 Individual: \$45 Family: \$65 Junior: \$15 Sustaining: \$90 Life: \$675

If you are a full time student over the age of 18, you will need to show proof (class schedule, school ID) to the membership director via email or at a meeting. Students under 18, should apply for Junior membership if they are not a part of a family membership.

Are you a part of a Family Membership?: Yes: ____ No: ____

(Note: Each family member must have a completed application regardless of age)

Donations are greatly appreciated!

Would you like to give an additional donation? If so, please list the amount. If you want it to be designated please specify (e.g. roof, Prod, 40" telescope). **Donation:** _____

Committee Use Only:

Dues: _____ Donation: _____ Total: _____ Check #: _____ Date: ____/____/____

1st Reading: ____/____/____ 2nd Reading: ____/____/____ Card Issued: ____/____/____ To Treasurer: ____/____/____

Via Sandy Mesics, Programs Director

Please consider presenting at one of our upcoming general meetings. I have been able to get some interesting speakers lined up, but I think it is important our members have the opportunity to give a talk as well. Eric (Loch) stepped forward and did a wonderful job in January.

I'm looking at these meetings: June 13, July 10, November 14, and December 12.

You can email me your interest, and we'll take it from there! astrosandy@gmail.com

Via Dave Raker, Society Librarian

I have transferred the following general meeting talks to DVD:

Earl Pursell Explorer's Guide to the Solar System

Pete Detterline: Comet NEOWISE

Mary Lou West: The Life of a Star

Eric Loch: Cherry Springs State Park

Robert Vanderbei: Astrodynamics

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! Click this link for more information at the LVAAS website:

https://lvaas.org/page.php?page=using_rmd_to_support_lvaas

Via Earl Pursell, UACNJ Liason: Virtual Presentations

During the off-season (November through March) UACNJ is presenting on-line astronomy related presentations occurring on the first and third Saturday of the month beginning at 8 p.m. on their website uacnj.org. You can also tune in by visiting their [YouTube channel](#). Subscribe to get notifications when the presentations go live.



Cover image by LVAAS member Richard Nelson

Cherry Springs ~ Pine Tree with Milky Way

Canon 5D Mark IV. Tamron lens 15 to 30 mm.

F 2.8. ISO 3200. 22 seconds at 19 mm

September 2020

LVAAS General Meeting

Sunday, March 14 at 7 p.m.

- Meeting will be ***online only** -

An Introduction to Deep Sky Observing

So you've looked at the Moon and the planets with your telescope, what else is there to see? Plenty! Nebulae, star clusters, dying stars and galaxies are all visible in amateur telescopes. This talk will introduce each type of object, describe what they are and give some bright and easy to find examples. Some practical tips for beginning deep sky observers are also given.



Bill Murray

An amateur astronomer for more than 50 years, Bill was employed as a software engineer in the electron optics division of the David Sarnoff Research Center in Princeton for 18 years. More recently he has taught high school mathematics and physics at Trenton Catholic Academy in Hamilton, NJ and is currently employed as planetarium technician at the New Jersey State Museum Planetarium in Trenton, NJ. A long time (36 years) member of the AAAP, Bill has held the posts of Observatory Chairman, Secretary, Program Chairman, Assistant Director and Director in the club.

***Members will receive an invitation to the on-line meeting by email. Prospective new members who wish to attend should contact membership@lvaas.org to arrange to receive an invitation.**

THE AMATTO GAME

(Astronomers Making Acronyms, Twenty Twenty-One)

So, yeah, 2020 was crazy. 2021 isn't starting out too much better. Travel is difficult, many venues are still closed, and activities cancelled. And, as always, the bad weather on the East Coast continues to interfere with our beloved hobby. Many of us are trying to figure out how to fill in all those extra hours. There is only so much Netflix binge-watching one can do.

Having all the time in the world to waste, many of us are craving for new ways to waste time. As your favorite Astronomy club, we aim to please and serve. So, we are happy to introduce a completely new way to waste time!

Our idea for a time-waster is based on the fact that astronomers are particularly infatuated with acronyms. Harvard University documents that phenomenon here:

<https://www.cfa.harvard.edu/~gpetitpas/Links/Astroacro.html>

There is no doubt that astronomy CRAVES the acronym!

Well, let's work with that. The year 2021, if spelled out, is Twenty Twenty-One. The acronym for that would be "TTO". Think about it...this opens up a world of possibilities for making astro-acronyms. For instance, the Mars Rover landing could have been billed as the "**Big Landing Of Twenty Twenty One**" (BLOTTO). Or perhaps one of those great sunrise photos from Pulpit Rock could be the "**Really Incredible Sunrise Of Twenty Twenty One**" (RISOTTO). Or maybe one would simply wish to convey a saying with an acronym, such as "**Fun In Astronomy Twenty Twenty One**" (FIATTO). You get the idea.

So, to celebrate the incredible year we are all hoping 2021 will be, we proudly introduce the **LVAAS Astronomy Acronym Contest of Twenty Twenty One** (LAACOTTO, a "recursive" acronym, i.e. an acronym within an acronym). We encourage all readers to get their thinking caps on and come up with some incredible astro-acronyms ending in "TTO"!

LAACOTTO RULES

1. This contest begins immediately upon publication of this issue of The Observer, and runs until 11:59UT on Saturday, May 1, 2021. Entries submitted after that will be discarded into the **Dustbin Of History** (DOH)!
2. This contest is open to all readers of this publication.
3. Acronyms should be submitted by email to astroacronym@gmail.com. You must clearly indicate, in the body of the email, the NAME and EMAIL address of the person who is making the entry. Info in the header alone does not count. Entries submitted in any other way will be DOH!
4. Acronyms must be astronomy or inorganic geoscience related.
5. Acronyms must end in "TTO", and those letters must mean "Twenty Twenty One" in your acronym base word string.
6. Prepositions and articles (parts of speech such as a, at, and, for, of) may be used or ignored in building the acronym...your choice.
7. **ONLY** the first letter OR the first two letters of the acronym's words may be used. No cherry picking of any of the 3rd & up letters in words such as "**E**lectromagnetic". Using this example, "EL" could be used in an acronym, but they **MUST** be used together.

8. The first letter of an existing acronym may be used in constructing a new acronym, but ONLY the first letter! This is known as a “recursive acronym”, see “LAACOTTO” above.
9. Acronyms must be at least four letters with ending with the base “Twenty Twenty-One” (*TTO) but can be any length beyond that. We might have to come up with a prize for the longest submission.
10. Acronyms themselves do not need to specifically mean anything, but they MUST be pronounceable using the normal English methods of speech construction. Any acronym using a sound outside the 44 phonemes of English speech will be DOH!
11. All of the speech parts used in pronouncing the acronym must be present in the acronym and cannot be inferred. This is not an automobile vanity license plate design contest. This means no “PNST8R” allowed, for you Nittany Lions out there.
12. Any off-color, political, derogatory, or offensive submissions will definitely be DOH!
13. All submissions will be judged by a secret panel, meeting in a secret location, under the Cone of Silence. The decision of the judges will be final.

So shut off NetFlix, get those thinking caps on, and send in your acronyms! Your 15 minutes of fame is waiting for you! The top submissions will be published in The Observer (anonymously if you wish) and distributed to the World! No other prizes are inferred or guaranteed...but who knows?



Night Sky Notebook for *March*

by

Peter Detterline

Night Sky Notebook

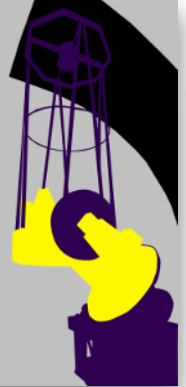
Peter Detterline



March 2021

Schlegel Observatory Report

by Rich Hogg – March 2021

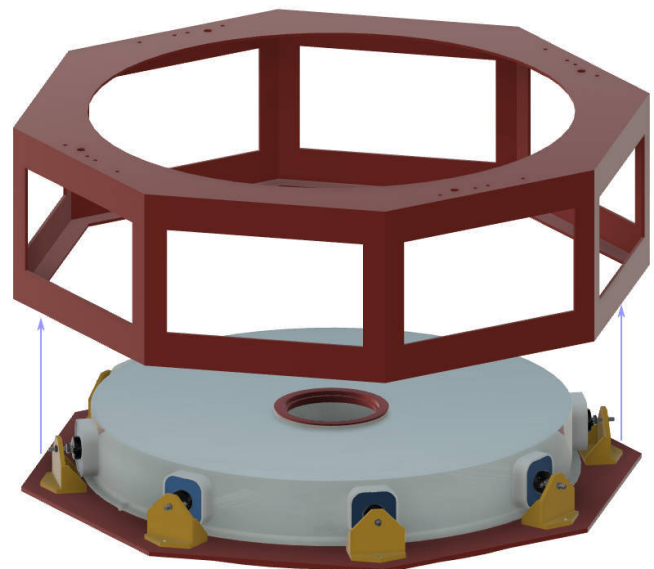


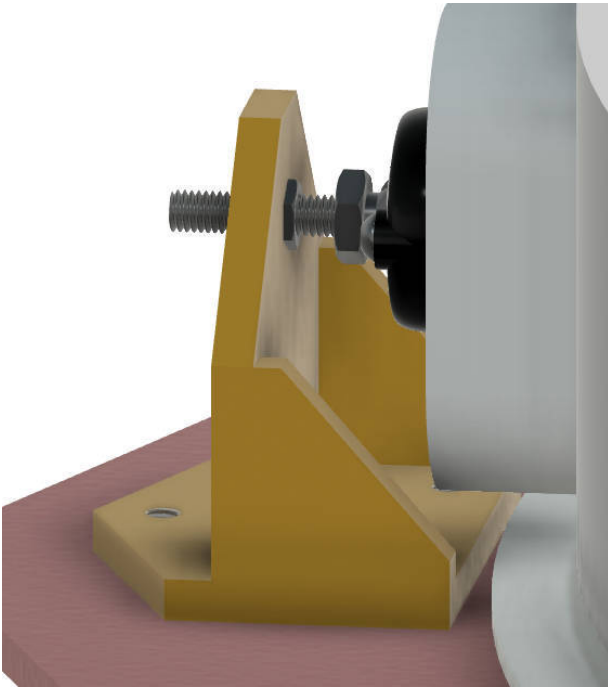
I've been working on finalizing the details of how the 40-inch mirror will be supported, specifically the edge supports. In previous reports I discussed the process of selecting silicone O-rings as the material for the elastomeric cushions that will be part of the support. Now I am working on the structure to hold it in place.

The original design for radial support structure, as well as previous alternative designs we considered, all had one thing in common: they were attached to the main octagonal frame that the mirror will live in. One thing I don't like about this is that the assembly process requires the bottom plate, with the mirror on top of it, to be lifted into the frame. So we have a situation where the mirror is resting on the bottom plate without anything to positively hold it from sliding off, and it needs to be carefully lifted into the structure which will secure it.

I decided to try to work out a way to attach the support structure to the bottom plate, instead; this would also allow us to adjust it before we lift it into the frame. There is not a lot of room, and we need a strong bracket to handle the weight of the large hunk of glass, so a custom bracket will be required. For this work, the structural analysis capabilities of the Fusion 360 software are extremely useful.

My first idea was for a simple bracket of two pieces of 3/8"-thick steel, welded at a 90-degree angle. The simulation results indicated that this would not be enough: the stress level in the steel was too close to the failure point, and it would bend more than we would like. However, adding triangular gussets to the right-angle joint would be sufficient. The image shows the fabricated brackets in yellow, in place as the mirror assembly is ready to lift into the frame.



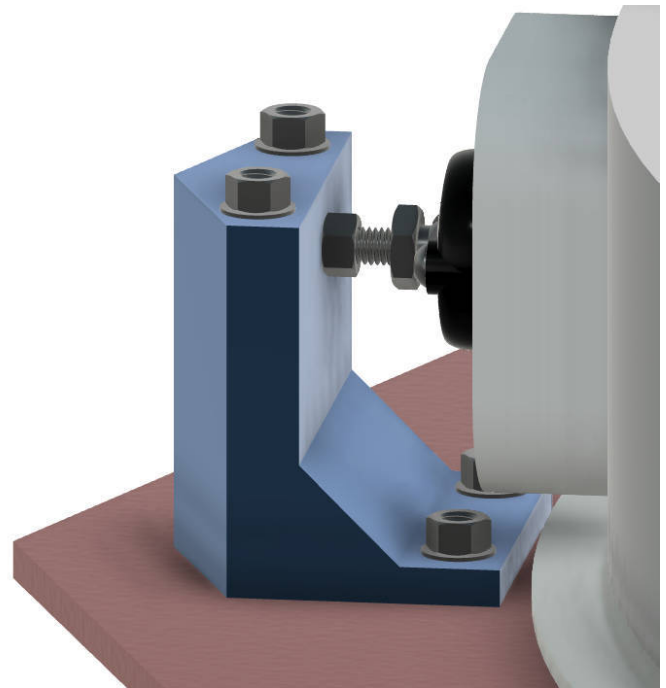


To do this, we would need to cut 4 pieces of 3/8" steel and weld them together, for each of the eight brackets. It seems like a lot of work, and a job for which the right equipment to make it easy exists, but not in the hands of anybody in LVAAS as far as I know.

I worked through a few more alternatives and arrived at the idea shown below, in blue. Each of these would come out of a 4-inch cube of aluminum, a milling process that a few LVAAS members do have the right tool for, and would be held to the bottom plate with through-bolts, nuts and washers. The mechanical simulation shows that this would work really well,

even better than the fabricated steel bracket, with excellent safety margins and very low deflection. So this is now my favored solution.

As I write this I haven't discussed the idea with any of the guys with milling machines, to see if they would be interested in signing up to make a big pile of aluminum chips for the benefit of the project, or if they have a better idea that we can look at. That's the next step. I am also working on building a simulation of the entire 'scope so we can get an overall picture of how it will perform structurally. Stay tuned.





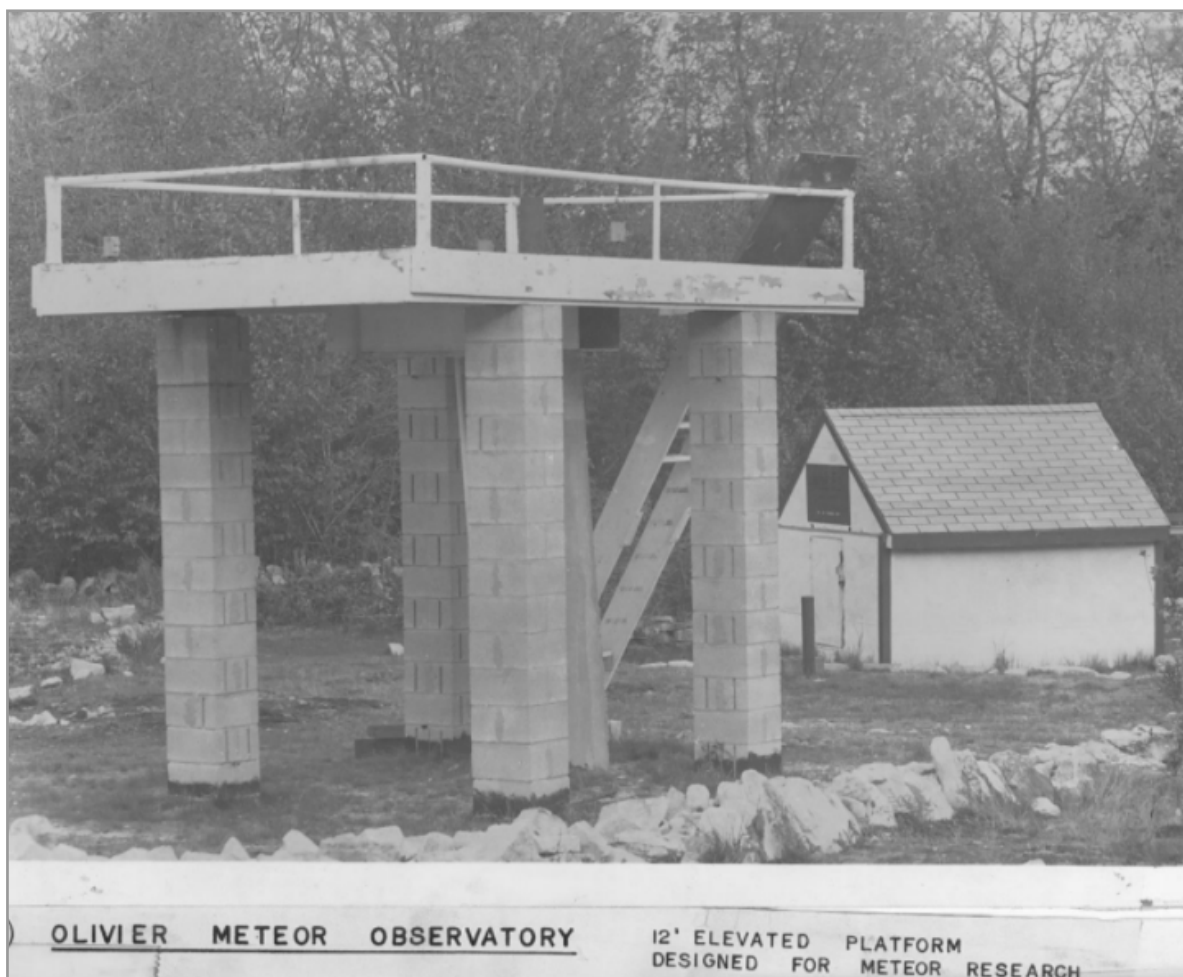
From the LVAAS Archives:

A Meteor Platform at Pulpit Rock

by

Sandy Mesics

In March 1971, the Board of Governors unanimously voted to give members Gary Becker and Stanley Wilkes permission to construct an observing platform at Pulpit Rock. At that time, Pulpit Rock hosted the Kawecki Observatory, the Arthur Fox Memorial Observatory, and the Schlegel-McHugh Observatory, which was then under construction.



Gary Becker and a handful of LVAAS members were avid meteor observers. According to Gary, “Stan Wilkes and I financed and built the platform along with a few younger members of the club who helped occasionally. The area was landscaped specifically for the observation of meteors. The platform was built to gain altitude above the trees to improve the horizons and get a better all-sky view. The portion of the property leased to us by the club was landscaped with an earthen tier to the west of the platform that afforded a really good view of the eastern horizon.”

According to Becker, “The platform was completed during the summer of 1972, the year that both Stan and I graduated and got jobs. ... A pier for a telescope was also incorporated into the design. Both the platform and the raised earthen area of the site were electrified. Stairs ascended to the observing deck which was secured by a trapdoor which allowed access to the observing area.

“The deck was composed of wood with a low railing so that observers walking around the platform at 3 a.m. would not be rudely startled by a 10-foot drop. There was also a 10-foot concrete pier offset towards the steps of the platform for a telescope or meteor cameras, but to my recollection that was never used, at least not by me.

The platform stood for about 20 years, and Gary recalled that “I can't say it was used a lot, but it was used depending upon where the meteor radiant was with respect to the horizons. As a new teacher, schoolwork cut into my free time and made it much more difficult to observe on a regular basis. More frequently the raised earthen tier was used since most meteor radiants didn't rise until later in the evening remaining fairly low throughout the night.



“The Olivier Meteor Platform survived in a deteriorating form until the grounds of Pulpit Rock were revamped in 1993 during the first year that I [Gary Becker] was director of the club. By that point, the deck had been torn down by the club members. I am assuming the pier is buried somewhere on the property. It was in that era when the National Park Service wanted to have the Appalachian Trail go through the site because the NPS thought that Pulpit Rock had been abandoned.”

Gary explained that the platform was named after Charles P. Olivier (1884-1975) who “founded the American Meteor Society in 1911 and presided as its first director for well over half a century. In his professional capacity for most of his career, Olivier was director of the University of Pennsylvania’s Flower Observatory and chair of its astronomy department. The observatory would eventually become the Flower and Cook Observatory. In the early 70s a meteor observing buddy of mine, Mark Adams and I went down to Narberth, PA to visit Olivier. For Mark, it solidified his career choice in astronomy. I had gotten into astronomy through meteor observing, so it was a very momentous occasion for me also.”

Thanks to Gary Becker for his reminisces.

Reference

LVAAS Board of Governors Minutes, 1971

When Pulpit Rock Astronomical Park Looks Like This....

Images courtesy LVAAS member
Jim Blandford.

Background Image of Pulpit Rock
Astronomical Park courtesy Google
Earth



...Pulpit Rock Maintenance Director Ron Kunkel Does This!



"I and my son with the help of the two boys built Snowy the snowman, but it was only my son and the two boys who built Blizzard the dog. It's fun to watch the cars drive by, turn around, and then come back and actually stop, get out of the car, and take a photograph. We didn't roll snow balls; they would have been way too big to roll and lift in place. Instead we built up the snowman by using shovels to slam a shovel full of snow against the snowman. And it got quite difficult to pack snow on once we got to the third ball because you had to lift the shovel so high. The hat was added by hand by packing buckets full of snow off of a ladder. The scarf and hat band are actually from a plastic table cloth that we cut up. They are pinned in place with wooden twigs. The eyes are 4" grinding disks held in place with a big nail. The nose and mouth are from colored foam floaties from the swimming pool. The buttons are softballs, and of course the arms are tree branches."

Photos courtesy Ron Kunkel, with permission.

by Gary A. Becker



Ironic, This Concept of Diversity

One of the great joys of astronomy for me is to look at photos of the vast array of objects that can be seen when we turn our eyes or telescopes to space. Rich colors abound as do interesting shapes and patterns, whether it be the Andromeda Galaxy, the Crab or Horsehead nebulae, a starscape visible on a cool summer's evening, or any of the eight planets and their 158 confirmed moons, all with varied topographies and hues.

I find it fascinating that there are so many different but compelling vistas to see. Back on Earth, there are an estimated 8.7 million species that share our home. Over 90 percent of Australia's reptiles, amphibians, flowering plants, and conifers are endemic to that continent. Diversity seems to be not only in our own perspectives of the universe, but as a genuine part of the DNA of the universe.

Humans are incredibly individual. We have our own way of being unique—so much so that we become excited when we see twins who are alike. I wonder how the universe would be without all of its variety? What would it look like? In astronomy if every planet, moon, star, or galaxy were essentially the same, would we even consider approaching the study of the universe in the same manner that we do, or would we simply say, “Been there, done that?”

Part of the concept of inquiry is to examine differences. From a scientific perspective, human beings have been singularly blessed as a species to be the most curious, to approach problems with a multitude of questions, and to seek answers for them without bias. There seems to be no end to these queries about the universe in which we reside. I would even say that we need diversity to survive.

If we examine our isolation and repetition during this pandemic, we get a taste of a world where social interaction is curtailed or even nonexistent. There is a monotony to our being. The vibrance of new experiences is lost to a people who love to be gregarious, but cannot be for fear of the contagion; hence that is why we chafe over the restrictions that are imposed upon us. Diversity is necessary. We know that to give up our social contacts now, we can once again return to normalcy in our future lives.

COVID is showing us how important it is to be individualistic, by showing us the opposite—the utter boring snapshot of our world today where everyone is alike, similar to the world of Camazotz in Madeleine L'Engle's, [A Wrinkle in Time](#), where we see a stagnant society that is controlled by a huge brain that suppresses individuality.

If diversity is in the DNA of the universe and our own planet, then why is there such a push for some humans to reject the rights of others to be different and shun what the universe is attempting to teach us? The universe is giving us a clear example to be unique. Why not heed its call?

©Gary A. Becker for StarWatch

beckerg@moravian.edu garyabecker@gmail.com
astronomy.org facebook.com/StarWatchAstro/



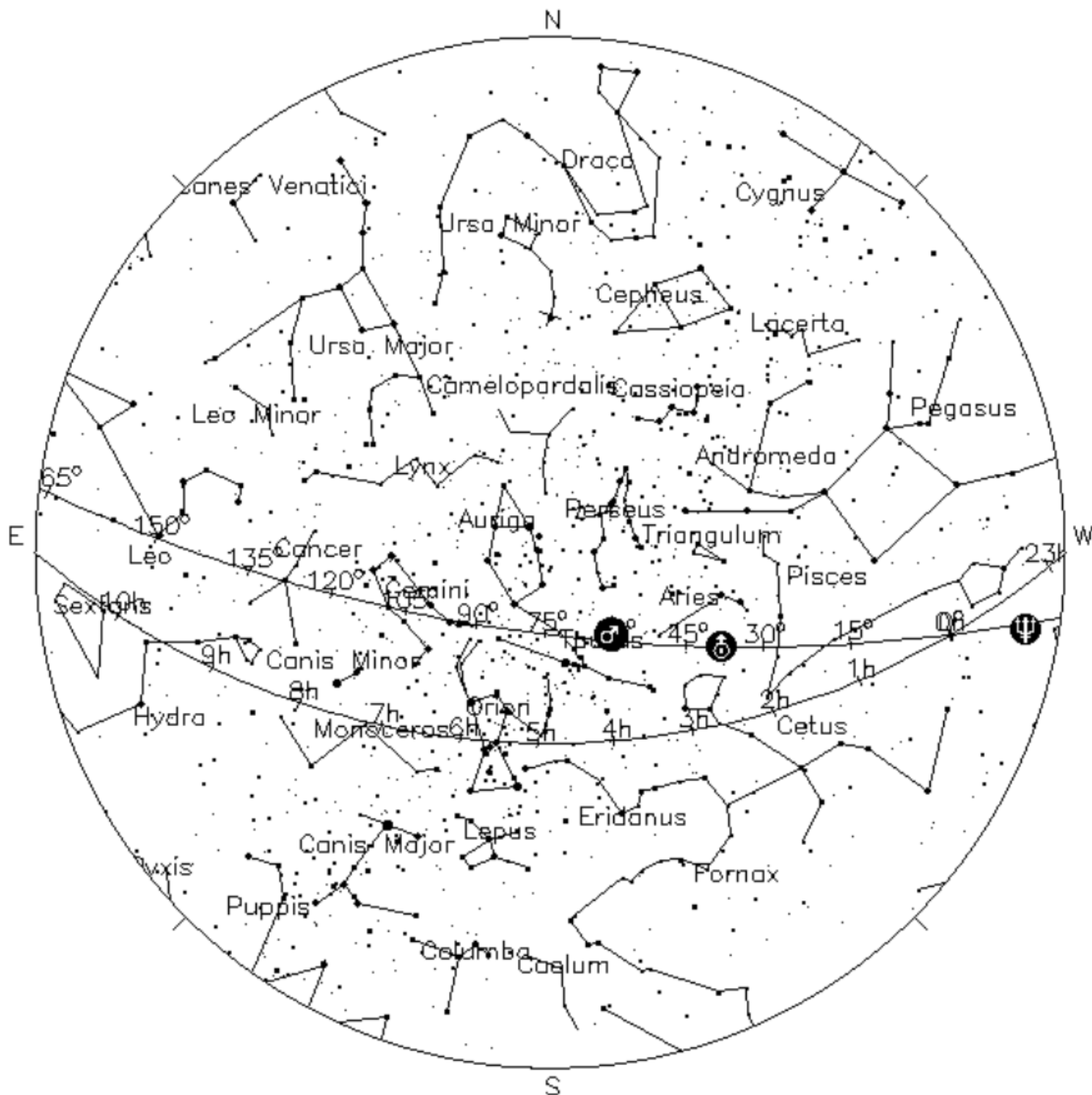
These two scenes were captured by LVAAS member Mike Waddell at Pulpit Rock Astronomical Park back on November 8, 2020.

Above , Frank Lyter enjoys the view of the setting sun amongst the stars from Pulpit Rock.

Bottom, the Milky Way provides a spectacular backdrop for the colorized Schlegel observatory in the foreground.

Images were taken with a Nikon Z5 ISO 800, 24mm, f4.0, 25 sec.

Sky Above 40°33'58"N 75°26'5"W Thurs. Mar 4 2021 23:00 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 2021

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

APRIL 2021

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

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 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.

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.

No permission is required for non-profit educational use of the material in this publication. Please send a link to, or copy of the publication containing the reprinted material to the editor at the above address. ***Some material in this publication may be copyrighted.***

To become a member of LVAAS, please complete and submit an application form, which can be 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

Copyright 2021 LVAAS, Inc.