The Observer

The Official Publication of the Lehigh Valley Amateur Astronomical Society

http://www.lvaas.org

610-797-3476

http://www.facebook.com/lvaas.astro

May, 2018

Volume 58 Issue 4

ad astra**********

I don't know what is happening to our planet: one day the temperatures are soaring into the 80's and the next day temperatures have plummeted down to the 40's and it is pouring with rain. And this weird weather is not just in the US. I spent a week in the UK early in April - the first day, I was walking along the beach in the sunshine and then it rained for the rest of the week so I didn't get a chance to do any stargazing. Thank goodness for NEAF!

As I mentioned at the end of last month's ad astra, the Northeast Astronomy Forum (NEAF), the world's largest astronomy and space forum, is held every year in April at the SUNY Rockland Community College, NY. Below is a view from the balcony before you go down the steps into the exhibition hall. Chris and I arrived early on the Saturday morning so we could have a good look

around all the exhibits before going to the talks in the afternoon. There must have been thousands of people there and would you believe it, standing in line behind us in the line for tickets was fellow LVAAS member Len Schiavino, who regularly helps out at star parties. Then not long after we entered the hall, Chris and I bumped into Pete Detterline, Ron Kunkel, Bill Dahlenburg, Tom Duff and Kyle Kramm. Yes, NEAF had been invaded by LVAAS!

Just before lunch, I went to a very interesting presentation “Lighting 101:LEDs and You” by Pete Strasser from the International Dark Sky Association. He explained how many of the new LEDs are giving out too much blue light which is effecting circadian rhythm of both humans and wildlife as well as increasing light pollution. I also went to another presentation “Preventing an Asteroid Extinction” by Dr. Kirsten Howley, a physicist on the Lawrence Livermore’s planetary defense team. “We do not want to end up like the dinosaurs,” she said. She then went on to explain how with the help of supercomputers the team derive analytical models to simulate asteroid deflection scenarios, and described a potential space craft called the HAMMER - the Hypervelocity Asteroid Mitigation Mission for Emergency Response - that might one day be used to detonate a nuclear explosion to alter the speed and subsequently the trajectory of an incoming asteroid.

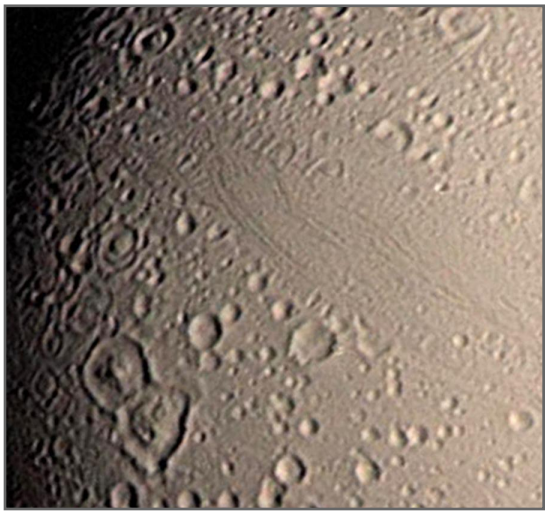
After sitting in a lecture theatre for couple of hours, it was time to get some fresh air. Outside several manufacturers had set up their solar scopes and yes, the sun was shining. The views of the surface of the Sun through some of those scopes were truly amazing - we need to buy one for our society!

And, of course, I had to have a photo taken with my new BF - the Green Alien. He said he liked my green Yoda hat.

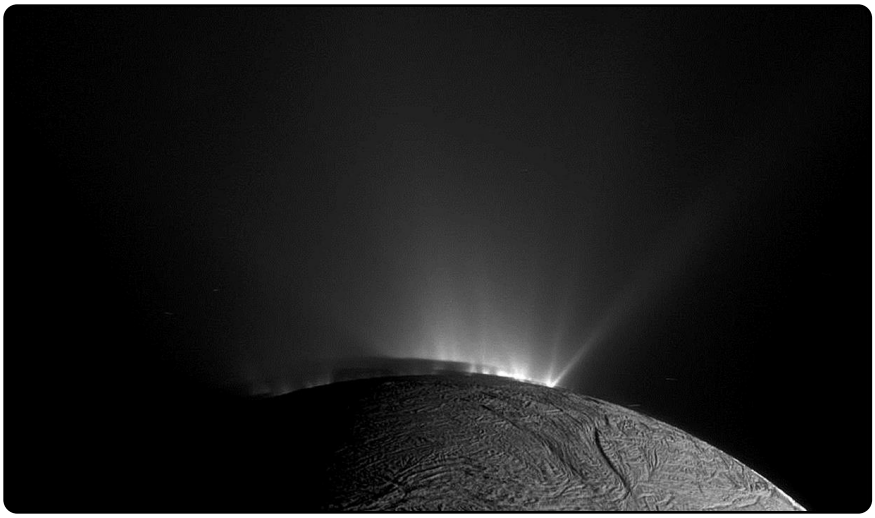
The astronomy gods cooperated for NEAF but they were in a bad mood last Saturday. Our star party was a washout. Nevertheless, we still had a really good turnout. Earl did a great job presenting both planetarium shows and Honorary LVAAS member and Senior Research Scientist at NASA's Jet Propulsion Laboratory, Dr. Bonnie Buratti gave a talk entitled **"Life In The Universe - What We Know Now."** *No, she didn't mention any little green aliens.....*

Early in her career, Bonnie worked with Carl Sagan, a hero of our librarian, Dave Raker. Well, Dave couldn't resist dressing up like Carl Sagan on Saturday, which made everyone smile! You can see him here with his back to us videoing Bonnie's talk - the DVD will soon be available in the library.

During her talk, Bonnie showed the now famous images of Enceladus, one of Saturn's many moons, taken by cameras on board the Voyager 2 and Cassini spacecraft. In 1981, Voyager 2 revealed that as well as being cratered, there were numerous linear striations on the surface of this icy moon, implying that it had been or still was geologically active. When Cassini began its flybys in February 2005, data from its magnetometer suggested that Enceladus had an atmosphere and the spacecraft's Cosmic Dust Analyzer detected thousands of dust sized particles. A few days later, the infrared spectrometer on board revealed that the part of the moon that should have been the coldest, the South Pole, was a blaze of heat. In 2010, Cassini captured the most amazing photographs of the South Pole showing jets of water bursting up from the striations on the surface.



A Voyager 2 image of Enceladus, taken on August 26, 1981



A Cassini image of the South Pole of Enceladus, captured on November 30, 2010

But why did Bonnie show this image in a talk about life in the universe? Well, many scientists believe that bacterial life on Earth started close to hydrothermal vents on the ocean floor. The jets of water observed at Enceladus's south pole are an indication that hydrothermal activity is occurring beneath the surface. Also, data from Cassini's Ion and Neutral Mass Spectrometer showed that the particles and gases in the plume above the south pole contained carbon dioxide, carbon monoxide and other organic material in much higher concentrations that expected. In short, the south pole of Enceladus could be a suitable habitat for life.

Bonnie finished her talk by mentioning that over 200 earth-sized planets have now been discovered orbiting M-type stars, the most common type of star in our galaxy. Several of these are in "the habitable zone." M-type stars are a lot older than our Sun, and will stay around for a lot longer. If there is life on these planets, then there is a better chance that it is intelligent life, as there has been a lot more time for it to evolve compared to a planet in orbit around a star similar to our Sun.

So what do we have to look forward to this month?

Well, Sandy has invited a terrific speaker, **Steve Conard**, to give the talk at our General Meeting on **Sunday May 6th at 7 p.m.** He will be talking about **the building of the telescopic camera onboard the New Horizons Spacecraft.**

This month is the perfect time to observe the planets and galaxies. Venus will be shining like a diamond in the western sky just after sunset. As darkness falls, Jupiter will rise above the southeastern horizon in the constellation Libra. On May 8th it will reach opposition making it appear at its brightest and largest. Saturn and Mars will rise after midnight and you may get a glimpse of Mercury on the eastern horizon just before sunrise. The Whirlpool Galaxy (M51) in Canes Venatici, the Sombrero Galaxy (M104) in Virgo and The Black Eye Galaxy (M64) in Coma Berenices are just a few of the many galaxies that can all be seen through a telescope on a clear night.

Of course the best time to do all this observing is on a New Moon weekend so why not come along to Pulpit Rock during

Mega Meet (May 11th - 13th)

For more information visit https://lvaas.org/staticpages/index.php?page=megameet.

ad astra,

Carol Kiely, Director

LVAAS General Meeting

Public Welcome!

Sunday, May 6 7:00 p.m.

Grady Planetarium, South Mountain Headquarters
620-B East Rock Road, Allentown, PA, 18103

"Building the New Horizons LORRI Imager: A 20 cm Ritchey-Chretien For Pluto"

a presentation by

Steve Conard

Ever wonder how instruments used on spacecraft are built? Steve Conard, lead engineer for the New Horizons LORRI (LOng Range Reconnaissance Imager) instrument, will make a presentation on how LORRI was fabricated and tested. Steve will also discuss New Horizons' upcoming encounter with Kuiper Belt Object 2014MU69, and show LORRI images collected during the flyby of Pluto-Charon in 2015 and Jupiter in 2007.

Steve Conard is an optical systems engineer for Johns Hopkins University Applied Physics Laboratory in Laurel, Maryland. He has developed hardware for space missions for over 35 years. His enjoyment of telescope making as a teenager led him to a career in optics. He remains an amateur astronomer, concentrating on asteroid occultation timing.

- **MegaMeet** is scheduled for May 11-13, 2018 Check out our website for details: https://lvaas.org/

Minutes for the LVAAS General Meeting - April 8, 2018

The April 2018 LVAAS General Meeting was held on April 8, 2018 at the LVAAS facility on South Mountain in Lower Saucon Twp. Carol Kiely, Director, was traveling, so the meeting was opened by Rich Hogg, Assistant Director, at approximately 7:00 p.m. with about 42 people in attendance.

Rich made a brief announcement concerning the recent Spacek family private star party for Frank Spacek's 70th birthday. Since his father, Mike, had been a telescope builder and had donated equipment to the club and because Frank had allowed members of LVAAS to clean out his dad's observatory/shop, we had several pieces of Spacek-built equipment on display in the library for all to see: part of a spectroheliograph, a 10" Schmidt/Maksutov astrograph, a mirror flat (part of a folded refractor), and two 9" refractor objectives. The star party went very well; the initially cloudy sky cleared after the planetarium show to allow observing!

Sandy Mesics, Program Chair, introduced the speaker for the event, James Chen, a retired Dept. of the Navy and FAA Radar and Surveillance Systems Engineer. He has been a guest lecturer at local astronomy clubs in the DC/Northern VA/MD (and now PA) areas. He has authored an article in Sky & Telescope on Dobsonian telescope design and several books on astronomy topics, beginning in June 2014: How To Find The Apollo Landing Sites, A Guide To Hubble Space Telescope Objects, The Vixen Star Book User Guide, The NexStar Evolution and SkyPortal User Guide, and, most recently, Astronomy for Older Eyes, which was also the topic of his presentation.

James noted that since many astronomers became interested during the Space Race of the 50's and 60's, astronomy's age range is skewed toward the 55+ age group. We can help ourselves out by eating a balanced diet, since nutrition is important to night vision and health in general. Although floaters are a common disorder of the eye, binoviewers can be used to lessen their effect while observing, however, if you experience an explosion of floaters, that might indicate a detached retina and you should see a doctor immediately. In the early stages, the effect of cataracts can be minimized by using a refractor, where ~80% of the light is concentrated in the center of the field, as opposed to reflectors, where the central obstruction tends to diffuse the light over the entire field. If the cataracts get worse, replacement of the clouded lens is a common and effective treatment. We can also help prevent cataracts by wearing UV-radiation-blocking sunglasses during the day. High eye-relief (≥ 20 mm) eyepieces are also very helpful for eyeglass wearers, allowing you to see the entire field without removing your glasses. He also went over some non-optical observing considerations we need to think about as we age: using an observing chair if you can't stand for long periods anymore, using solar scopes so you can observe during the daytime, downsizing your scopes to make them easier to set up (so you'll use them more often,) or constructing an observatory so you no longer have to move your scope.

Socializing is another important aspect to consider as we age. Star parties, mentoring, and public outreach are all good ways to socialize. Also, having a buddy to observe with is a good idea as we age. Another option for retirees who like to travel is to go to places with historical importance or excellent viewing. For the "Top 10 Travel Destination for an Astronomy Geek" see https://www.smithsonianmag.com/travel/best-places-see-stars-180949867/.
The talk and Q&A finished at approximately 8:15 p.m.

After a short break, Rich reminded us about Iridium satellites and flares, i.e., the reflection of sunlight on the satellites' large solar panels that are visible from the Earth are as bright as -8th magnitude! Since these satellites are being replaced with smaller versions, they will cease functioning and be de-orbited in the near future. To see them for yourself enter your location at the website www.heavens-above.com to see when and where to look in the sky, and how bright the flare will be.

Scott Fowler, Membership Chair, announced that anyone who has not renewed their membership for 2018 is now officially overdue. The Board has granted a one month reprieve, and an email reminder will be sent out to all delinquent members. Please pay your dues at the meetings or by mail (form available on website or in our newsletter.) Membership cards for those who have paid their dues are now available. Readings of new members: second reading: Vincent Giranda of Doylstown had his second reading and is now a full member of LVAAS. Dennis Decker, Kathy Craig, Jason Zicherman, and Brian Long had their first readings.

Gwyn Fowler, Treasurer, gave an abbreviated financial report. The income for the General Fund for the previous month was $1542.42, with expenses of $716.02.

Ron Kunkel, Pulpit Rock Site Maintenance reported that the Pulpit Rock site and the approach road are clear of snow. He lubricated the lock on the gate and the area looks to be in good shape.

Rich gave an update on the 40" (more details are in the newsletter): due to recent adjustments, the mount is probably closer to correct polar alignment than it has ever been before, but he will need to take some star readings on a clear night to be sure. The final specs for the mirror were sent to Mike Lockwood and he can begin to work on the secondary (the primary is finished and coated.) There is much more work to be done on the telescope and observatory, so work parties will be scheduled this spring and summer.

Tom Duff, Megameet coordinator, reported that Megameet is scheduled for May 11-13, 2018. More details will follow. The 18" is working well; the 12" may not be working. Rich added that with the new methods of alignment available, we may want to try to improve the alignment of the 18" as well.

Dave Raker, Library and History director reported that the library has a table of free material that anyone is welcome to take. There are also books and videos for sale in the library and in the Red Shift.

General Announcements:

Mike Clark said he received an email from someone who is selling a Orion SkyQuest telescope. Anyone interested should contact him. Our speaker, James Chen, also announced that a friend of his was selling a Losmandy GM-8 mount, if anyone was interested.

Scott Fowler pointed out to new members that Mike Clark is the point person for telescope rentals, which allows members to try out different types of telescopes before they buy one of their own. Also, Tom Duff is the one to see for keys to the facilities.

Tom Duff reported that April 21 and 22 is the Northeast Astronomy Forum (NEAF) in Suffern, New York at Rockland Community College. It is the largest astronomy-related event on the east coast and includes lectures by noted astronomers, engineers, and physicists, as well as displays and sales by many of the major manufacturers and distributors.

The next Star Party will be Saturday, April 28 at 6 p.m. and Dr. Bonnie Buratti will be our guest speaker.

The next Astroimaging group meeting will be on Thursday, May 3 at 7 p.m. at South Mountain.

The next General Meeting will be Sunday, May 6 at 7 p.m. at South Mountain.

Minutes recorded and contributed by Secretary Earl Pursell

Ron's Ramblings

Ron's Ramblings is a monthly series of articles describing some recent or otherwise important event in astronomy. The ramblings will attempt to describe both the astronomical event and its significance. Obviously, the description will be that of a rambling amateur astronomer.

Neutron Star Merger and Other Revelations

In the last two articles I discussed the specifics and some of the revelations from the detection of GW170817, the merger of two neutron stars. Thanks to the multi-messenger aspect of the merger, astronomers concluded that the merger of two neutron stars are indeed the origin of short gamma-ray bursts. Astronomers also confirmed that the gravitational waves do travel at the speed of light as predicted by general relativity. In this month's article I will look at some other revelations from GW170817.

The origin of the heavy metals like gold, platinum, silver, and uranium has long been a cosmological mystery. Supernovae were theorized to produce some of these heavy metals but the observed amounts of these metals in the Universe greatly exceeds the amounts produced by supernovae. Thanks to the multi-messenger aspects of the neutron star merger, optical spectroscopic observations confirm that neutron star mergers produce vast quantities of these heavy metals. GW170817, the merger of a 1.1 and a 1.6 solar mass neutron star, is estimated to have produced about 200 Earth masses of gold and 500 Earth masses of platinum. The observed optical afterglow of the neutron star merger produced a vast radioactive cloud of material and is now being called a 'kilonova.'

The multi-messenger aspect of the neutron star merger has also placed boundaries on the value of the Hubble Constant. An initial estimate of the constant derived from this observation is 70.0 (km/s)/Mpc, roughly consistent with other current best estimates. And future neutron star mergers are expected to further reduce the uncertainty of this value.

And what are the potential remnants from the neutron merger? A hypermassive neutron star is believed to have formed initially and then collapsed into a black hole within milliseconds, as evidenced by the large amount of ejecta (much of which would have been swallowed by an immediately forming black hole) and the lack of evidence for emissions being powered by neutron star spin-down, which would occur for longer-surviving neutron stars.

Future observations of neutron star mergers, because they last a lot longer than black hole mergers, will enable extremely sensitive searches for deviations between general relativity and predictions by alternative theories of gravity. The merger of two neutrons and its detection in gravitational waves and in various EM wavelengths is likely more 'earth-shaking' than the detection of the black hole mergers.

The end of my ramblings until next month.

References:

GW170817. Retrieved from https://en.wikipedia.org/wiki/GW170817

McLaughlin, M. (October 16, 2017). Viewpoint: Neutron Star Merger Seen and Heard. Retrieved from https://physics.aps.org/articles/v10/114

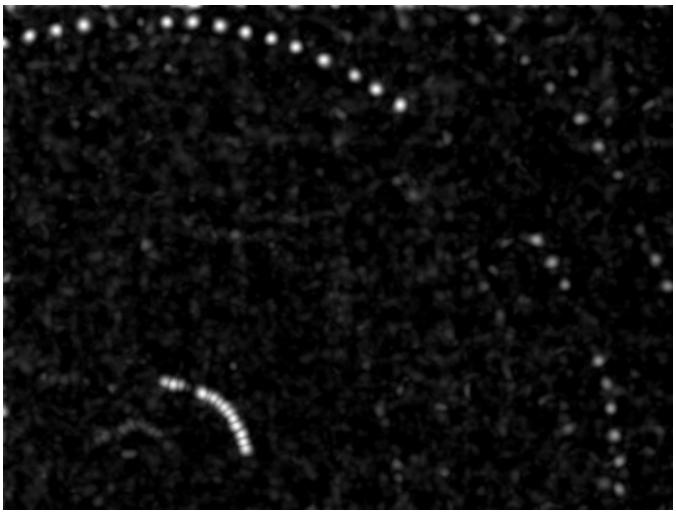
Scharping N. (October 18, 2017). Gravitational Waves Show How Fast The Universe is Expanding. Retrieved from http://www.astronomy.com/news/2017/10/gravitational-waves-show-how-fast-the-universe-is-expanding

Schlegel Observatory Report

by Rich Hogg — May 2018

Since my last report, I was aware of two chances to go back to Pulpit Rock to take the next step in the polar alignment mission, and I took a pass on the first of them. We needed an evening with some visibility of the circumpolar stars in order to do an alignment check, and April 10 afforded one such. But, it was cold and windy, and the weather in my sinuses was not entirely clear, so I decided to stay warm.

Friday the 13th was predicted to be 25% overcast, but decidedly pleasant, and my head was in better shape as well. So, I decided to try my luck, and I met Ron Kunkel on top of the mountain shortly after 7. We got set up, and then relaxed for a bit while waiting for the stars to come out.



We were able to start capturing data at about 8:40, and we were done by 9:00. An overlay of the star fields we imaged, from which you can infer the center of rotation, is shown at left. We found that in the azimuthal, or east-west, direction, the axis of the telescope now points just 4 minutes of arc off true north! This is excellent since it confirms that we are close to where we need to be, as well as extremely close to the estimate from my measurements and CAD modeling as reported last month.

Up/down, we are almost 1/2 degree too high on the north side, as compared to just under the 1/3 degree that I had calculated. The 1/6-degree discrepancy amounts to a total position error of a little over 1/8" over the baseline formed by the dimension of the mount. It could be just measurement error, but I suspect that we changed the height of the south side of the base a bit, and didn't account for it, between the previous night-sky check and the corresponding measurements.

Neither that discrepancy nor the 1/2-degree vertical misalignment is a concern at this point, since the elevation is an easy adjustment. The important thing is that we now have the azimuth close enough to do the required drilling and other fabrication work to finish re-attaching the mount firmly to the pier. Frank Lyter will lead the effort to do that in the coming weeks, probably with some help from Ron and I and possibly others.

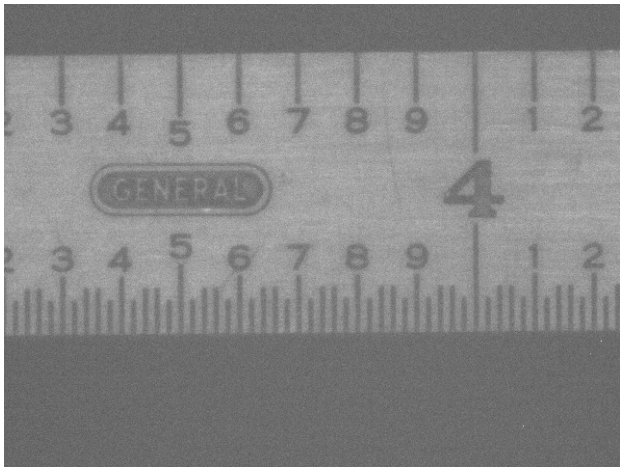
It Lives

In its dark lair, behind the curtain, across from the Red Shift in our headquarters building, we have re-awakened an ancient, sleeping beast. Pete Brooks has oiled up the gigantic machine lathe, given it a long-withheld taste of sustenance from the power mains, and listened as it rumbled back to life.

We haven't allowed it to take a bite of the metal just yet, but it has the aluminum main baffle tube for the Schlegel in its jaws, and soon there will be a mess of shiny shavings on the floor. The baffle tube was made with an outside diameter of 8.5 inches, and our primary mirror's central core has an ID of 8.55. After dividing the difference between the two sides of the baffle, this gives a clearance of 25 thousandths. That is greater than zero, but we do not think it is large enough to account for the inevitable differences between theory and practice that arise in a project like this. So, we are planning to remove some aluminum, to see if we can give ourselves a reasonable amount of margin for assembling and aligning the instrument, while still maintaining sufficient structural integrity in the baffle tube.

Getting Back to Tube Flexure

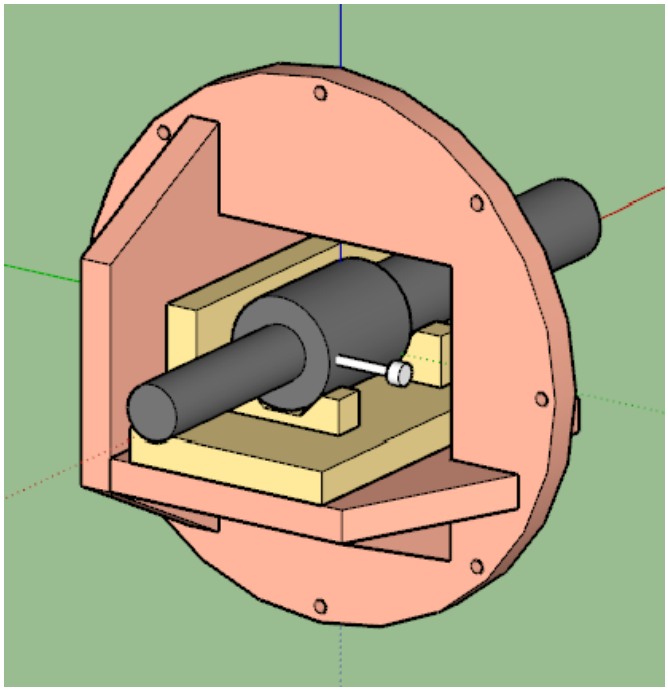
Now that the alignment situation is under control, I am back to working on the tube flexure measurement as proposed in the August, 2017 issue of this column (link). I will be using the PMHGT, or "Potato Masher Hand Grenade Telescope" that we have been using for the alignment checks. (You have to call it something, so as far as I am concerned, the name inspired by Dave Raker has stuck: it's the PMHGT.) I've inserted my Dad's 2X Barlow into the system, using the same camera, and I am able to focus it on a target 112" away, which is the spacing between the primary and the secondary. The image at right, a 1" segment of a ruler seen from 112" away, is from this test (scaled 50%).



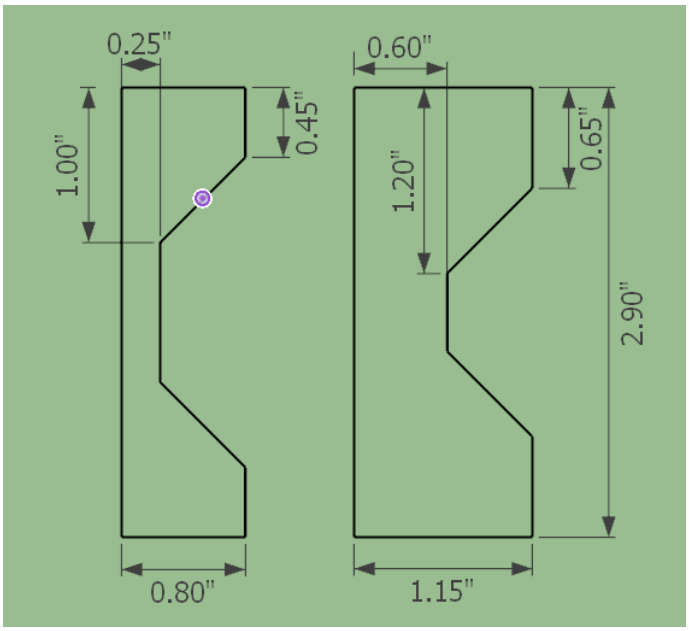
The plan is to install the PMHGT at the eyepiece location, image a target at the secondary location, and measure how much the image shifts as we point the OTA in various directions. For this to work I'll need to make sure that any shifting that we observe is due to flexing of the tube structure, so flexing of the mounting arrangement for the PMGHT needs to be minimized. The setup with the geared tripod head that I have been using for polar alignment won't cut it. I tried it, and it doesn't take much hand-pressure to cause the image to move by a substantial amount, so I fear that it will flex a bit under the force of gravity. We will need to fix this when we go for final polar alignment, also, but it hasn't been a problem for the preliminary work to date.

So, I've been busy doing more 3D CAD work to come up with a design for a mounting fixture for this purpose. (I haven't come up with a good name for this yet. I was telling my Mom about the project, and

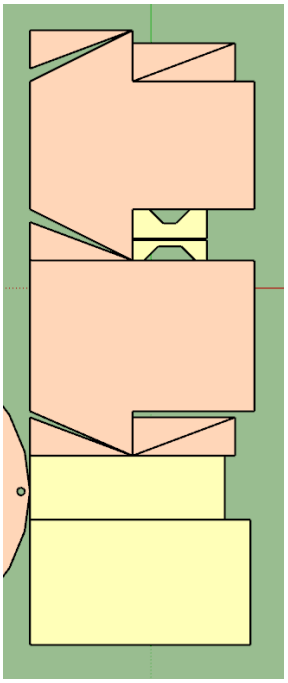
as we were wrapping up the conversation, she said "I'll let you get back to work on your doo-hickey dum dum." I don't know.) Whatever we call it, a rendering of the current design is shown at at right.



I used FreeCAD to do the 3D work on the mount-pier fixture and alignment, but for this I went back to SketchUp. I like FreeCAD because it is free and open-source, and for the mount project, the manner in which it could be scripted using the Python language made it easy to represent all of the weird little angles and offsets in the imperfect, real-world situation that we were dealing with. But I haven't really learned FreeCAD's design user interface yet, and for quickly knocking together a design for this mounting structure, Sketchup was the path of least resistance. It also makes it easy to generate dimensioned drawings, and even to rearrange the parts to form a cutting plan, as shown below. (And yes, I am planning to apply for a job at IKEA when this project is finished.)



As I write this I am also getting ready to spend the weekend at NEAF, so I will probably begin feeding the plywood into my bandsaw to make these cuts when I get back.



Current Status and Activities: We have confirmed that the polar alignment is within a few minutes of arc in the azimuthal direction, and shortly we'll finish re-fastening the mount firmly to the pier. We are working on turning down the outer diameter of the main baffle to provide more clearance between it and the primary mirror core opening, and preparing to measure the amount of tube flexure.

StarWatch

by Gary A. Becker

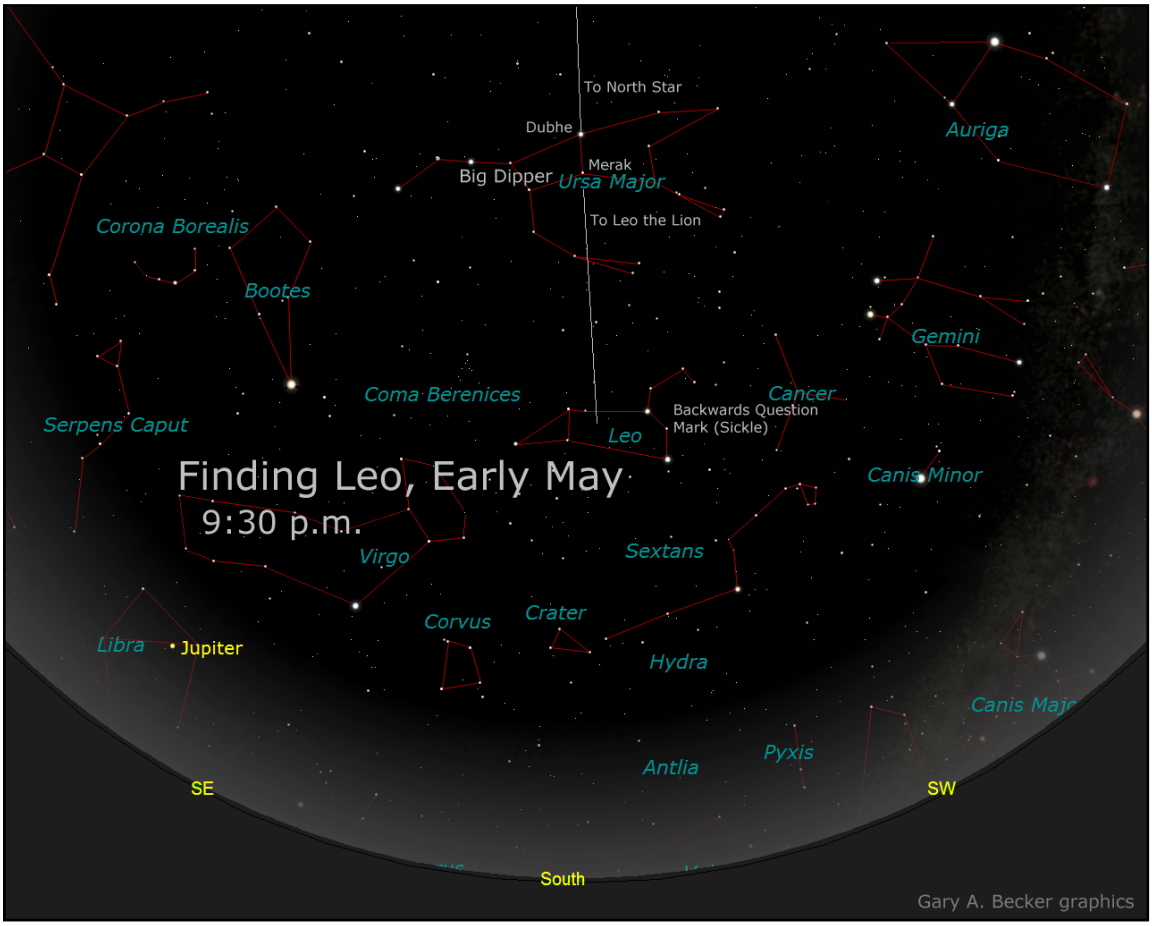
It's Leo Time

The weather has been cooperative enough that both of my Moravian astronomy classes have had the opportunity of viewing the heavens from Shooting Star Farm, a much less light polluted location north of Quakertown, as well as from the Sky Deck, situated on the rooftop of the Collier Hall of Science. Bill Jacobs and Johnny Killwey open up their farm to my Moravian pupils and friends who bring their high-end telescopes for an evening of stargazing fun. My Tuesday/Thursday class had an exceptionally clear evening on April 10, however, temperatures went below freezing before the end of the event. It was definitely long-john weather, but the sky was fantastic. One of the star patterns that was especially noticeable was Leo the Lion, high in the south as soon as it got dark.

To the Egyptians 4000 years ago, Leo served a practical purpose to everyone who lived along the Nile. When Leo was in conjunction with the sun, it was the “Time of the Lions,” when the sun shone more directly on Egypt, heating the air and baking the ground, compelling the lions that lived in the neighboring hills to seek the refreshing waters of Egypt’s lifeblood for relief. The Egyptians even had a reason for why it became so hot during that time of the year. The sun combined its powers with Leo’s brightest star, Regulus, and the other prominent luminaries of the king of the beasts to produce the summer heat that drove the lions crazy with thirst.

At the time of the construction of the Great Pyramid, 2560 BC, the sun actually occulted Regulus on July 12 (Gregorian Calendar) so that the lion was in close proximity to the sun from mid-June through mid-August. Today, the sun passes below Regulus, but it is close to Leo’s alpha star from late July through late September. Why the change? Our calendric system is based upon the **tropical year**, which results from the time interval between two successive crossings of the vernal equinox (first moment of spring) by the sun and not a full revolution of Earth around Sol, which is about 20 minutes longer. The westward motion of the vernal equinox transpires because the Earth’s axis wobbles in a nearly 26,000-year cycle called the precession of the equinoxes. By using the tropical year instead of the exact orbital period of Earth, holidays stay in sync with the seasons. Christmas will always remain in step with early winter, but the stars of Christmas will slowly change to become the stars we observe in early summer. That will take about 12,000 years.

Check out Leo the Lion by first finding the Big Dipper high in the NE right after dark. Then take the Dipper's two Pointer Stars, Dubhe and Merak, and instead of using them to find the North Star by traveling left, move to the right in a straight line across the sky until you see a backwards question mark. That is the head and part of the body of Leo. Bright Regulus will be the 'dot' at the bottom of the backwards question mark. To the left of the question mark, three stars form a distinctive triangle which becomes the hindquarters of the lion. Putting it all together gives one the impression that the lion really represents the Egyptian sphinx. Check it out! I'm not lying about the Lion or the sphinx. It's really cool to see!



From the LVAAS Archives:

Remembering Beau Jones, an LVAAS "original"

By Sandy Mesics

Beginning in February 1968 and continuing through September 1968, when he enlisted in the Army to serve in Vietnam, The Observer was edited by 22-year old John A. (Beau) Jones. Beau was one of LVAAS's most memorable characters.

Figure 1. Beau Jones' masthead for The Observer in 1968

He was born in Pottstown in 1946, and attended the Hill School in Pottstown, PA and William Allen High School. After graduation, Beau attended three colleges in three years: Albright, Gettysburg, and Ursinus. In an interview with the Pennsylvania Gazette in 1971, Beau explained: "I have a difficult time handling reality." After his college adventures, Beau enlisted in the U.S. Army and served from 1968 to 1971, when he received an honorable discharge. There is some controversy about this, as it was also reported that in the early 1970s, Beau received a Conscientious Objector discharge from the Army.

Beau was a talented bass guitarist, and had been active in the 1960s Lehigh Valley music scene. His band, The Limits, played regularly at venues such as The Purple Owl, King Arthur's Court, and the Mod Mill. The Limits enjoyed considerable local success, but disbanded when Beau entered the military. Beau also played with Jay & the Techniques, as well as Little Eva and other artists. During Beau's last year in the military, he was able to live off base, and moved to Philadelphia. With his roommate and friend, Rick Levy, Beau started a new band: Uncle Beau's Day Camp, which quickly became Wax.

Figure 2. The Limits. Beau is on the right, with a beard.

Wax had some notable success: they played at the Electric Factory with the likes of John Mayall, the Flamin' Groovies, and Manfred Mann's Earth Band; they opened for the Byrds at Playhouse in the Park; they played before 25,000 people at the very first Earth Day celebration in Fairmount Park and opened for Chicago in Allentown.

In 1971, Wax was signed to a record deal, but the record company went under, and the material, though recorded, was never released. But it turns out that in May of ’71, well after the record deal tanked, Wax had gone into a New York studio and recorded their material completely live. That recording was not unearthed until 2009. By then, not only had none of the band members ever heard the recording; they didn’t even remember doing the session. They simply assumed that high-quality recordings of Wax didn’t exist.

Unfortunately, about that time, in the summer of 2009, Jones was diagnosed with a malignant brain tumor. His longtime friend and bandmate Rick Levy reported that Beau was “remarkably resilient,” and had handled adversity with characteristic calm. His friends and former bandmates are united in their affection for him and—much to their own surprise and delight—for Wax.

Figure 3: Beau with the band Wax

Beau was trained as a teacher of Transcendental Meditation in Belgium. He locally taught and checked the meditation of many. Aside from being an LVAAS member and avid amateur astronomer, Beau was an amateur movie maker was active in the Christian Education programs at First Presbyterian Church, and as a baseball coach with West End Youth Center. He passed away on September 3, 2010 from brain cancer.

Though his tenure as editor of The Observer was short, Beau brought a playful creativity to the publication, introducing psychedelic artwork flourishes and including poetry along with the usual articles. Beau was also instrumental in transporting the prefabricated Arthur Fox Memorial Observatory to Pulpit Rock for the Ursa Major junior LVAAS group.

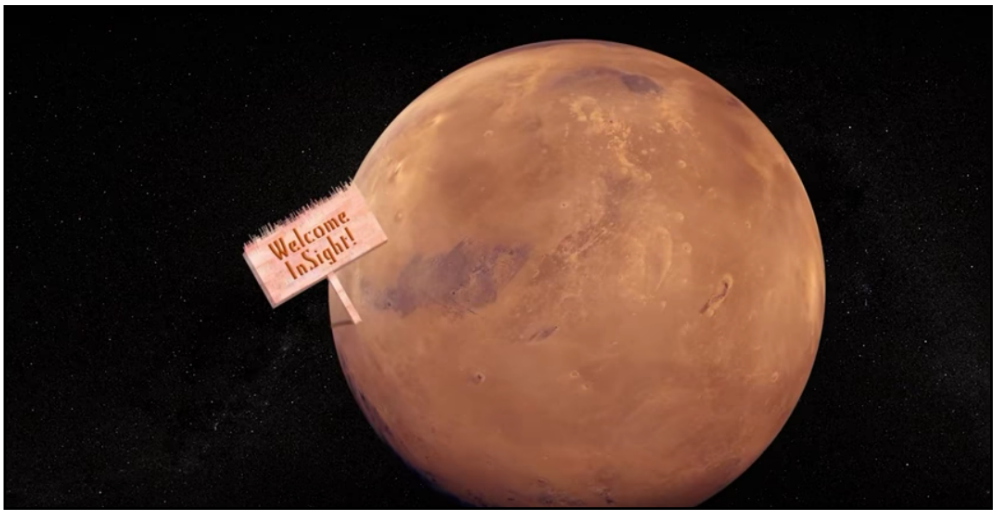
References

The Observer, June 1968

The Pennsylvania Gazette http://thepenngazette.com/wax-in-1971-lost-photos-from-a-band-still-making-rolling-stone-top-10-lists-today/

Media Five Entertainment Archive: http://mediafiveent.com/archive/viewprofile.php?id=165

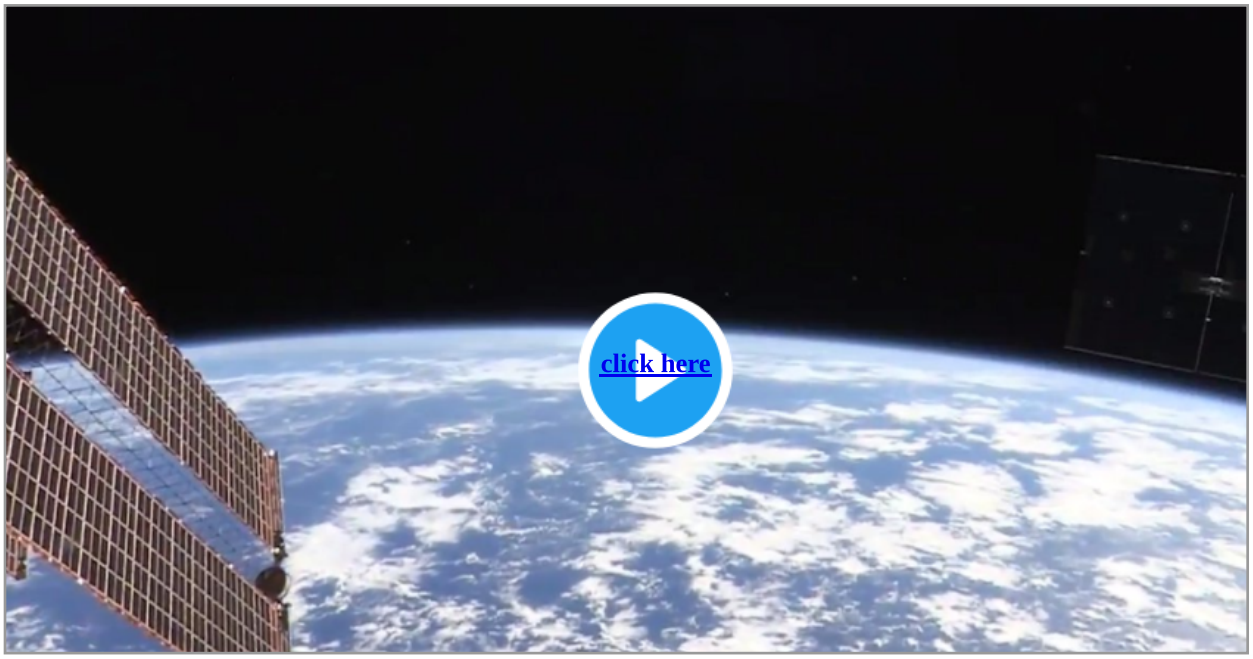
What's Up - May 2018



- https://www.youtube.com/watch?v=5F4d_Ze3D0M

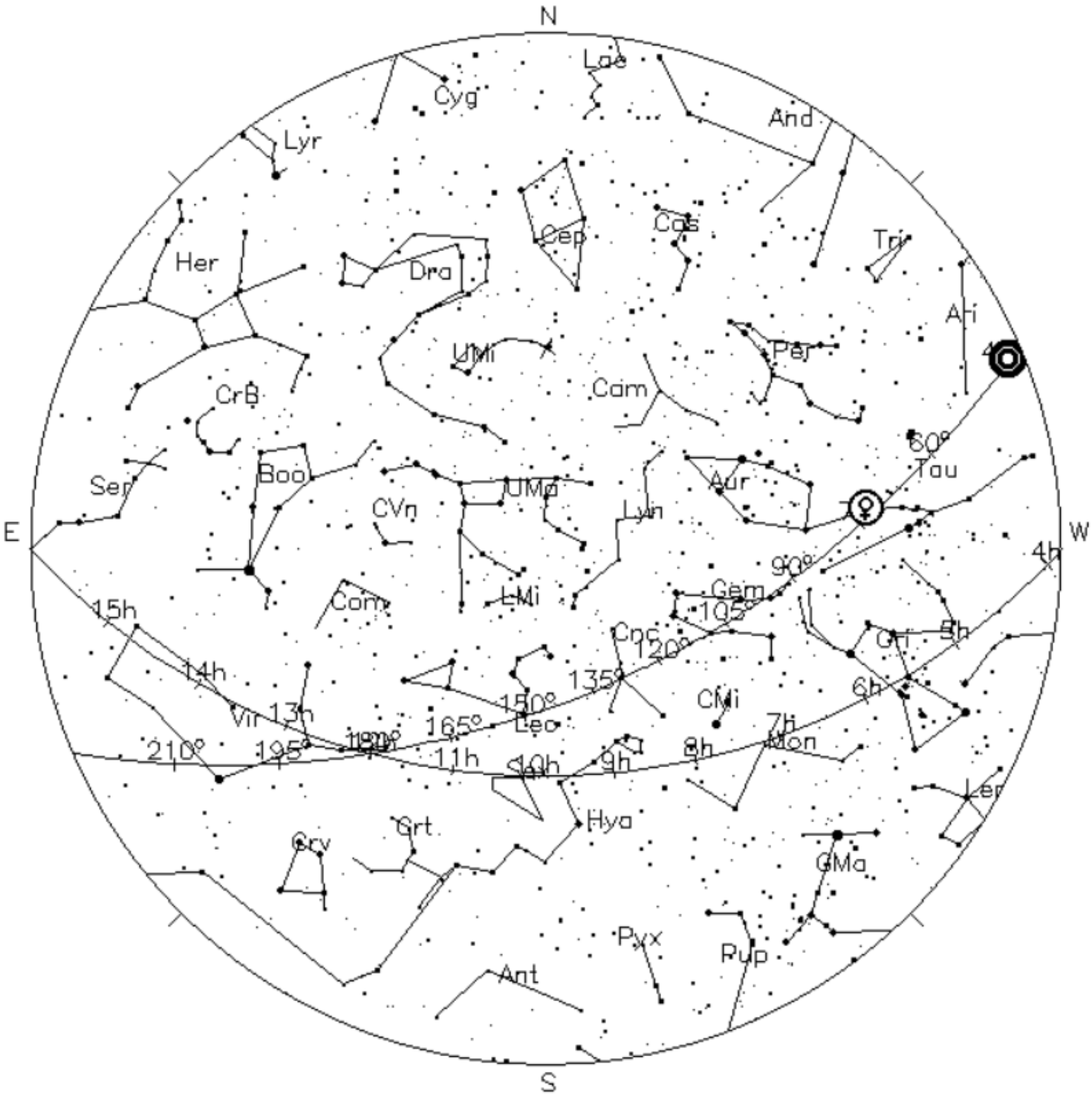
“It all gave a pleasant illusion of eternity,
this quiet sailing under a perfect sky
towards a horizon perpetually five miles ahead,
never nearer.”

- Patrick O'Brian



source: Twitter

Sky above 40°33'58"N 75°26'5"W at Sat 2018 May 5 0:01 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

Customize Your Sky : *at* : http://www.fourmilab.ch/yoursky/

MAY 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01	02	03 Astro Imaging 7:00 PM	04	05 LVAAS Scout Group - South Mountain (Tentative)
06 General Meeting - South Mountain 7:00 PM	07 Last Quarter Moon	08 LVAAS Scout Group - South Mountain	09	10	11 MegaMeet	12 MegaMeet
13 MegaMeet Mothers Day	14	15 New Moon	16	17	18	19 Star Party
20 Deadline for submissions to the Observer LVAAS Board of Governors Meeting	21 First Quarter Moon	22	23	24	25	26
27	28 Memorial Day	29 Full Moon	30	31		

JUNE 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					01	02
03	04	05	06 Last Quarter Moon	07	08	09
10 General Meeting - South Mountain 7:00 PM	11	12	13 New Moon	14 Cherry Springs Star Party	15 Cherry Springs Star Party	16 Cherry Springs Star Party
17 Cherry Springs Star Party Deadline for submissions to the Observer Fathers Day	18	19	20 First Quarter Moon	21 Summer Begins	22	23 Star Party
24 LVAAS Board of Governors Meeting	25	26	27	28 Full Moon	29	30

2018 LVAAS Event Calendar

2018 LVAAS Event Calendar												
	Sundays			Thursday	Friday	Saturday	Mondays	Multi-Day Weekends	Moon Phase			
	General Meeting time	location	Board meeting	Astro-Imaging	Lunatics and Stargazers	Star Parties	Scouts at S. Mountain	Scouts at Pulpit R.	New	First	Full	Last
January	2:00 PM	14 Muhlenberg	28	4		no mtg		no camping	16	24	1 31	8
February	2:00 PM	11 Muhlenberg	25	1		no mtg		no camping	15	23		7
March	2:00 PM	11 Muhlenberg	25	1		24		30-31-1	17	24	1 31	9
April		8 S.M.	29	5		21		27-28-29	15	22	29	8
May		6 S.M.	20	3		19		25-26-27	15	21	29	7
June		10 S.M.	24	no mtg		23		29-30-1	13	20	28	6
July	5:00 PM	7 S.M.	29	no mtg		21		27-28-29	12	19	27	6
August	7:00 PM	11 Pulpit	26	no mtg		18		24-25-26	11	18	26	4
September		9 S.M.	30	27		15		21-22-23	9	16	24	2
October		14 S.M.	28	25		13		26-27-28	8	16	24	2 31
November	2:00 PM	11 S.M.	25	29		17		no camping	7	15	23	29
December	2:00 PM	8 Grace Com	30	20		no mtg		no camping	7	15	22	29

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 is at at Grace Community Church

NEAF	**April 21-22**
Cherry Springs S.P.	**June 14-17**
Stellafane	**August 9-12**
Black Forest	**September 7-9**
Mega Meet	**May 11-13**

Contributed by Bill Dahlenburg

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 http://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. Please contact the editor at editorlvaas@gmail.com

Members please use above email address for submissions.

Society members who would like to submit articles or images for publication should kindly do so by the Sunday before the monthly meeting of the board of governors (please see calendar on website) for the article to 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.

Every effort is made to properly credit the sources of the material used in this publication. If additional credit is required, please notify editorlvaas@gmail.com for a timely clarification.

To become a member of LVAAS, please complete and submit an application form, which can be downloaded at http://lvaas.org/filemgmt_data/files/LVAASNewMemberForm.pdf

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