The Observer

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Ad Astra

A recent discussion about safely observing the sun sparked my interest, so I decided to look into it in the hope to shine some light on the subject. (Pun intended!)

There are many myths and misconceptions about how to safely observe the sun. Some have roots in truth while others are outright wrong. It is extremely important to know the difference, because light from the sun can permanently damage the eyes, leaving people either partially or completely blind.

Dr. Ralph Chou, OD, professor emeritus at the School of Optometry and Vision Science University of Waterloo in Ontario, Canada wrote an article for the American Astronomical Society. In it he discusses the dangers of Solar Retinopathy, the damage to the retina caused when someone stares at the solar disk for too long. Surprisingly, it is not caused by heat from the sun. He calculated that the increase in temperature within the eye would only be by 4 degrees Celsius, with a 3mm pupil (very large for looking at something so bright) when staring at the sun directly overhead. Instead, our eyes actually get damaged from a phenomenon known as the ‘blue light hazard.’ This is simply the name that was given. Whether or not blue light is actually harmful to the eye is not within the scope of this article because it is not astronomy related and, based on my research, is not supported by the scientific evidence. Instead, the blue light hazard actually refers to the damage caused to the eye by ultra-violet (UV) light.

When UV light enters the eye it can cause damage to many different structures within the eye. It also causes biochemical reactions in the retina that can lead to the inability of that area to detect light, hence blindness. It is also important to note that the cornea (the lens of the eye) absorbs and protects some of the UV light, mitigating the damage it causes. However, those who have had their corneas replaced, for example to treat glaucoma, should know that these replacement lenses may not have any UV blocking capabilities at all and thus their eyes are more susceptible to damage caused by looking at the sun. For perspective, a person with their natural cornea may only be able to glance at the sun for 0.6 seconds before damage begins to occur. Someone who has had their cornea replaced with an artificial lens

(many of which do not have UV protection) would therefore experience damage with glances even less than half of a second!

In another paper published in the Astronomical Journal, the authors measured how comfortable it was for experienced and inexperienced solar observers to look at the sun using a range of solar filters meeting the requirements for safe solar viewing (that standard is ISO 12312-2), welding filters, and some solar filters that were not rated to the ISO 12312-2 standard. Every solar filter met the minimum luminous transmittance (light reduction) requirement, but the ones that failed to meet the ISO 12312-2 standard failed because they blocked too much light. Some were so dark the solar disk could only be observed with averted vision. The study found that the vast majority of solar filters rated ISO 12312-2 made for a very comfortable viewing experience and so did some welding filters. The study authors suggest masks rated between 13 and 14 are ideal and offer adequate protection, and in some cases even greater protection against certain wavelengths of light than solar filters.

Now for the misconceptions. Aside from welding filters, the majority of solar filters on the market today are made from 2 materials. The first type is aluminum-coated polyester, commonly called ‘Mylar,’ your basic cardboard, flimsy film solar filter. Sometimes it is also laminated onto polycarbonate and looks similar to sunglasses. It is effective, cheap to produce, and does not break when dropped. This leads to the misconception that ‘Space Blankets,’ also made from Mylar and aluminum foil, make effective solar filters. Unfortunately they do not. Space blankets are too thin and thus do not block out enough solar radiation. Aluminum foil is not an adequate filter either, and is prone to breakages. Mylar, while more durable than aluminum foil, can also suffer breakages or defects. Do NOT use mylar solar filters if there is any one defect more than 0.2mm in size, or more than one defect in any 5mm circle. The ones similar in design to sunglasses have given some people the misconception that using really darkly shaded sunglasses will give them adequate protection. They do NOT! The second type is ‘black polymer’ in which carbon particles are suspended in a resin. These filters are used in front of binoculars, camera lenses, and telescopes. They filter out much of the white light, but in the past they have not filtered out enough infra-red light. Modern versions have a aluminized polyester (Mylar) coating in addition to address this concern.

In short, enjoy the sun and the views it has to offer, but do so with properly rated solar filters. Never use a space blanket or aluminum foil for direct viewing. A safe alternative can also be welding filters rated between 13 and 14. Lastly, always inspect your equipment before use!

If you would like to read either of the articles yourself, links below:

https://eclipse.aas.org/sites/eclipse.aas.org/files/AAS-Chou-Tech-Report-Solar-Eclipse-Eye-Safety-2023.pdf

https://iopscience.iop.org/article/10.3847/1538-3881/ac013e

In other news, the first meeting of the Stargazers Group, headed by Kyle Kramm, was well attended with 25 people. Multiple people brought their telescopes, and some of the society's telescopes also opened up for people to use.

As you know by now, Mega Meet has been postponed to August 11-13. This will coincide with the Stargazer's Group and the General Meeting, so there will be lots to do! Sandy Mesics, our Programs Director, is still in need of a speaker for this meeting. If you have a topic you can speak on for 45 minutes to an hour, please contact Sandy asap!

Finally, I would like to continue to thank our committee leaders and all those who help and contribute to running the society, and adding value not just to our members, but the community as a whole. This takes a lot of people and we continue to look for volunteers to help us out. If interested, feel free to reach out to the committee leader(s) on our contacts page. Thank you all so much!

Ad Astra!

Mike Huber

Lehigh Valley Amateur Astronomical Society (LVAAS)

MEGAMEET

Pulpit Rock Astronomical Park

August 11-13, 2023

We may re-schedule depending on weather; please check lvaas.org for updates

EVENT INFORMATION

MegaMeet is LVAAS's annual barebones star party without vendors, speakers, or registration fees. Members in good standing of regional amateur astronomy clubs are invited to attend. MegaMeet attendees can either come for the evening observing sessions or tent camp for the weekend. Access to the site, behind a locked gate, is via 2 miles of some rather steep gravel mountain road. The road is in good shape and is readily accessible for cars and light trucks. Trailers should not attempt to access the site. Camping is encouraged, but space is limited. Due to limited capacity at the site **LVAAS nonmembers will be required to register for this event**. You can register for the event by emailing duffmeister@rcn.com with your name, and number of people in your party, indicating if you plan to camp or just observe. Questions can be directed to the same email address.

SITE INFORMATION

Pulpit Rock Astronomical Park, or as it is commonly called, "The Rock," is a 4.3-acre mountaintop site near Hamburg, Pa that sits 1,600 feet above sea level on the Appalachian Trail. The installations and equipment at Pulpit Rock offer the serious amateur or the novice an opportunity to contribute meaningful scientific information to the astronomical community, or to simply view the splendors of the heavens from our several acres of landscaped grounds. The site was founded in the 1960's by Henry Kawecki, an industrialist from Berks County, who built the first observatory.

DIRECTIONS AND SITE ACCESS

Directions to the site can be viewed at the LVAAS website. For LVAAS nonmembers or members without keys **the locked gate will be attended on Friday August 11 from 4:00 p.m. to 7:00 p.m. and Saturday August 12 from 4:00 p.m. to 7:00 p.m.** Upon access to the site, you will receive the combination to the special gate lock used for this event and will be free to come and go until 12:00 noon on Sunday.

FOOD SERVICE

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

FACILITIES

There are **no shower facilities;** however, there is electricity and a flush toilet available on site. Please visit the LVAAS website for information on Pulpit Rock Astronomical Park.

Submitted by Tom Duff, Astroimaging Director

Minutes from the LVAAS General Meeting – May 7, 2023

The May 2023 LVAAS General Meeting was conducted electronically using an on-line service and in person at the South Mountain headquarters. Approximately 50 people were in attendance. Director Michael Huber opened the meeting at 7:00 p.m.

Tonight's General Meeting's presentation was given by Dr. Joshua Pepper. The topic for tonight's talk was "The New Landscape of Exoplanet Discovery." Dr. Pepper received his undergraduate degree from Princeton University, and his PhD from the Department of Astronomy at The Ohio State University. He was the VIDA postdoctoral fellow at the Department of Physics and Astronomy at Vanderbilt University. He is an astronomer and associate professor in the Department of Physics at Lehigh University. His research involves the discovery of extrasolar planets - planets that orbit stars other than our sun. The main focus of his research for many years was the KELT project - a pair of small, wide-field telescopes that were used to search for transiting planets orbiting bright stars. Currently he is working as a Program Scientist in the Astrophysics Division of the NASA Science Mission Directorate.

Dr. Pepper discussed how NASA has multiple mission directorates and he is involved in the NASA Science Mission Directorate, specifically in the Astrophysics branch. The Astrophysics Division looks at how the universe began, how the stars, planets and galaxies evolved, and whether or not we are alone. Up until 1989 our solar system contained the only known planets. We now classify planets as 3 types: Earths or terrestrial, Neptunes or ice giants, and Jupiters or gas giants. Multiple methods are used to discover exoplanets including transits or eclipses, direct discovery, wobble, or microlensing. Over 5000 exoplanets have been discovered with most discovered as transits. Scientists are trying to determine how 'normal' our solar system is. Specifically they are looking at exoplanet orbits, solid surface planets, atmospheres, and whether they are in the habitable zone that could have liquid water.

The Kepler Space Telescope was launched in 2009 to look for exoplanets by observing transits. Thousands have been found with the following conclusions: planets are common and most stars have them, small terrestrial planets are very common, and many exoplanets are in the habitable zone. The Transiting Exoplanet Survey Satellite (TESS) has identified a small planet just 33 light-years away, and many super-Earths that range between Earth and Neptune in size. Why there are no super-Earths in our solar system is unknown. They are now studying protoplanets, and the atmosphere of planets using radio wave telescopes. It is proposed to use the JWST to study atmospheres of hot gas giant exoplanets.

NASA is also conducting a search for other life. They have defined life as ‘a self sustaining chemical system that responds to Darwinian forces.’ Currently they are searching for technosignatures and chemical disequilibrium in atmospheres. There are plans for upcoming space telescopes that include StarShade, a space telescope that will block the light of the star allowing the exoplanet to be directly viewed, and Habitable Worlds Observatory. In addition to NASA, there are many other organizations also involved in studying exoplanets including private companies, universities and research facilities, as well as the NASA JPL project ‘Eyes on Exoplanets.’ Questions were entertained, and after that a break was taken at 8:19 p.m. The informational meeting resumed at 8:32 p.m.

Membership: Rich Hogg

- The following members completed their Second Readings and are now Full Members:

  Wojciech (Vo) Maziarz
  Curtis Mohn

- The following members completed their First Readings:

  Daniel Bachelor
  Chris Webb (family membership with son, Johnny)

- The following members have previously completed a First Reading and are still eligible to complete a Second Reading to become full members:

  Jonathan Cuadra
  Karen Houser
  Louie Stine
  Steve and Linda Zieniewicz (family membership)
  Robert Lehman
  Michael Vila

Director Comments:

- The Buzz mailing lists have been updated to the groups.io platform. There are currently 5 groups set up and members are encouraged to sign up for individual interests by going to The Buzz Email Groups page on the website. The five groups are:

    - Lvaas-pulpitrock
    - Lvaas-southmountain
    - Lvaas-astroimaging
    - Lvaas-cherrysprings
    - lvaas-outreach - if you are interested in volunteering to help out at outreach events

- We are starting a new Stargazers Group being hosted by Kyle Kramm. This will be an informal meeting on the second Friday of each month starting at 7 p.m. at South Mountain. The theme is 'Let's Explore the Sky Together.' There is no set agenda and we will explore topics as members request. New members are encouraged to bring their equipment to explore and learn how to best use it. Weather permitting, we can also use the Society's telescopes for observation. The meetings will happen rain or shine, with a plan to have a hiatus in the winter. The first meeting will be this Friday May 12, 2023 at 7 p.m.

Education: Blaine Easterwood

- Hundreds attended the Space Fest in Easton this weekend
- We had multiple scopes in use

Next General Meeting

Our next general meeting will be June 11 at 7 p.m. at our South Mountain Headquarters. Our speaker will be LVAAS Secretary Joe Zitarelli, presenting "Optics: Bringing Photons to your Retina Since 1610."

The meeting was adjourned at approximately 8:48 p.m. The May 2023 General Meeting was recorded.

Submitted by Joe Zitarelli, Secretary

Via Sandy Mesics, Programs Chairperson

Upcoming LVAAS General Meeting Speakers

June: LVAAS Secretary Joe Zitarelli speaking on: "Optics: Bringing Photons to Your Retina since 1610."
July: Gary A. Becker and Peter Detterline will speak on "Eclipse 2024."
September: Charles Bracken will speak on Astroimaging.
October: John Conrad will speak on the Osiris Mission.
November; author Dava Sobel will speak; topic TBA

Speakers are still needed for August at Pulpit Rock, and December at the Holiday Party.

Please contact astrosandy@gmail.com if you have ideas for speakers, or would like to volunteer yourself.

A successful club runs on its volunteers! New members, you can meet other members and learn a lot about astronomy by volunteering to help out at the many activities LVAAS holds during the year. A good place to start is the monthly Star Parties, but other opportunities abound. Join the LVAAS Buzz groups to connect with other members with similar interests, and help move LVAAS into the future!

Via France Kopy, Newsletter Editor:

The email address for submission of material for publication in *The Observer* is now observer@g.lvaas.org. Members who are not submitting material may continue to email me at the 'editorlvaas@gmail.com' address.

Longtime LVAAS member Matt Binder has been awarded the prestigious National Eagle Scout Association's Distinguished Eagle Scout Award. LVAAS congratulates you, Matt! Read more about Matt on page 10 of this issue.
Matt's father Dave, also a longtime society member, offered some reflections on Memorial Day to WFMZ news

Via Bill Dahlenburg, Star Party Coordinator

LVAAS needs help with **Star Party** activities. Anyone willing to help will be trained on running the telescopes. Training is easy! Planetarium shows are: 6 p.m. for kids, 7 p.m. Presentation, 8 p.m. Planetarium Show for adults. **Our next Star Party will be Saturday June 24, 2023.** Additionally, if anyone is interested in helping with or taking over the organization of LVAAS Star Parties, please contact Bill: sm_maintenance@lvaas.org

Via Dave Raker, Society Librarian:

Our library will not be closed during inventory this summer.

Via Earl Pursell, Planetarium Director

Attention LVAAS Members! Would you like to learn how to run the LVAAS Planetarium? Would you be interested in giving planetarium shows at Star Parties, to Scout groups, etc.? Then contact Earl Pursell, planetarium director planetarium@lvaas.org to set up training. Training generally takes about 90 minutes, and pre-written scripts for shows are available.

***Via Earl Pursell, UACNJ Liason*:**

UACNJ provides free public programs on-site at our Observatory in Jenny Jump State Forest, New Jersey from April through October on Saturday evenings. To view the program line-up please visit uacnj.org.

Cover: **M42: The Orion nebula** **Imager: Joe Zitarelli**

Acquisition Data:

Skywatcher ED 100 f9 Telescope
ZWO ASI1600MM Pro Camera with Ha, Oiii and Sii Narrowband Filters
180' total integration time
Processed in Photoshop using the Hubble Palette: Ha 300" x 13 = Red, Oiii 300" x 7 = green, Si 300" x 16 = Blue

LVAAS Member Matt Binder Receives Prestigious Scouting Award

LVAAS life member Matthew Binder recently received the National Eagle Scout Association's Distinguished Eagle Scout Award from the Pennsylvania Dutch Council and the National Council of the Boy Scouts of America.

The Distinguished Eagle Scout Award was implemented in 1969. Since that time fewer than 2,000 of the awards have been approved out of 2.7 million Eagle Scout ranks. The award was established to recognize Eagle Scouts who, after 25 years or longer of having received the Eagle Scout Award, have reached the highest national level of success in their field. In addition, these recipients have demonstrated a strong record of volunteer leadership service to their community.

This prestigious national level recognition was only the fifth award presented by the Pennsylvania Dutch Council in the past 54 years. Matthew earned the Eagle Scout Award in Minsi Trails Council during 1987, and earned six Eagle Palms for his Eagle Scout medal by earning an additional 30 merit badges (a total of 51) while he was still a youth.

An excerpt from the award ceremony reads "Matthew D. Binder has been a professional educator in the Hempfield School District for over 25 years. Matthew was an eighth grade Earth-Science Teacher at Centerville Middle School from August 1996 to August 2010. From 2010 on he has been the Hempfield Senior High School Communications Technology Teacher. Matthew has used his 23 years of experience in television to create and manage a hands-on, student centered, and student directed high school media program. He is a professional educator who teaches broadcasting, journalism, film, and media communications to high school students. He is the coordinator of a daily school news program, weekly web program, and monthly cable news magazine program on behalf of the Hempfield School District. He is also the liaison to the Student Television Network, and organizes yearly journalism teams and travels to national competitions. He coaches the Centerville Middle School Chess team and is a member of the Hempfield School District Commencement Speaker Committee.

In addition to his High School involvement, Matthew is also an Adjunct Meteorology Instructor at Harrisburg Area Community College. He has taught twenty-two cumulative semesters of in-person synchronous and blended learning model labs. He has prepared seventy-five videos for the creation of an online asynchronous meteorology course. He was presented the Faculty Scholars Award for Technology Education in 2017 and 2018. He was an Adjunct Weather and Climate Instructor at West Chester University during 2020.

Matthew's civic commitments include acting as a liaison for the North Museum Science and Engineering Fair in Lancaster, Pennsylvania. He organized and supervised all the Hempfield School District contingent of students that were selected for the regional science and engineering fair. He has served as the assistant Centerville Middle School Science Fair Director.

Matthew was a Pennsylvania Science Assessment Creation and Review Committee member and a member of NASA's Science Visualization Review committee. His responsibilities included reviewing, correcting and critiquing NASA animations for educational content before public release.He was also an Educator Assistant at NASA's Goddard Space Flight Center in Greenbelt, Maryland.

As an Eagle Scout, Matthew continued to demonstrate his outstanding character and excellent achievement by having been selected as a finalist as an educator astronaut candidate in NASA's Astronaut Class of 2004. He was one of thirty-five educator astronaut candidates selected from a field of over 3500 highly qualified applicants nationwide for the position. Unfortunately, a medical issue found at the very end of the selection process blocked his ability to go into space.

Matthew has remained as a member of NASA's Network of Educator Astronaut Teachers since 2004. While a member of NEAT Matthew has given over thirty-two presentations on behalf of NASA-Network of Education Astronaut Teachers. His presentation about "My Experience as an Education Astronaut Candidate" was given to school, community, and teacher groups in the region, as well as national and regional conferences.

Matthew is a humble man but might be considered a bit of a celebrity here in the Susquehanna Valley. He can be seen as a forecaster and broadcaster of weather on WGAL-TV-8. He can also be seen on WFMZ TV 69 in Allentown, Pennsylvania, as a forecaster, and his time on television has spanned over twenty-five years.

Although volunteer service to the community through Scouting is not required for the Distinguished Eagle Scout Award, he has never ventured far from a program that provided so much to him. Matthew earned his Eagle rank in 1987 and earned six palms over the next three years. He is a Vigil Honor member of the Order of the Arrow and served on camp staff for four summers. He served as an Assistant Scoutmaster in Troop 6, Minsi Trails Council from 1991-2000. As Assistant Scoutmaster in Troop 9 from 2000-2005, he went on to serve on Troop 9's committee for another twelve years.

After his son Adam was born and old enough to join Cub Scouts, Matthew jumped at the opportunity to volunteer to be a leader in his son's Cub Scout Pack. He served Cub Scout Pack 181 as a Tiger Leader and an Assistant Cubmaster of 142 when they joined the pack in Lititz. When his daughter, Sarah joined Cub Scouts with Pack 142 Matthew served as Cubmaster. Currently Matthew is an Assistant Scoutmaster for Adam with Troop, 349, and an Assistant Scoutmaster for Sarah with Troop 142G. He also helps other Scouts BSA Scouts as a Merit Badge Counselor for twelve different merit badges.

Matthew was a youth participant at the 1987 World Jamboree in Australia, staff and band member for the 1989 and 1993 National Jamboree at Fort A.P. Hill, and will travel with his son to the Summit Bechtel Reserve this summer to participate in the 2023 National Scout Jamboree as an Assistant Scoutmaster.

As you can see, Matthew's commitment to his family, profession, community, nation, and service to humanity are expansive. What has been shared today is truly the tip of the iceberg. Matthew has been recognized by educational, civic, and national organizations. He was a finalist for Teacher of the Year in Pennsylvania and was recognized as a National Outstanding Eagle Scout by the Minsi Trails council. The list of achievements and recognitions is exceptionally long for this special person. It is now time to add another one to the list…

Ladies and gentlemen, I present to you Mr. Matthew Binder, the newest Distinguished Eagle Scout."

Matthew has been a full member of LVAAS since November 1979, when he was named so, at seven years of age by special action of the Board of Governors, because of his exceptional knowledge of astronomy and maturity beyond his years. Matthew has done two presentations at LVAAS, and one at the Berks County Astronomical Society on his experiences as an Astronaut Candidate. His proud parents are life member Dave and Lois Binder of Allentown. Matt and his wife Susan live in Lancaster with their son Adam and daughter Sarah.

Contributed by Dave Binder

Eagle Scout Astronomy Project

LVAAS Family member Claudio T. Stabile is a Life Scout with Troop 102 in Saylorsburg Pennsylvania. He is building an Astronomy Observatory at the Polk Township North Field with Polk Township as the Service Project Beneficiary as his Eagle Scout Service Project.

He will be holding Star Party Fundraisers at the Polk Township North Field on June 10th and 24th starting with a Solar Presentation at 4:00 p.m., and June 16th and 29th for evening viewing starting at 8:30 p.m. Claudio is hoping to raise funds for a storage shed, solar panels and electrical components and supporting materials for the observatory.

Claudio is asking LVAAS members to support his project by spreading the message, consider attending the fundraisers with member telescopes and equipment, or donating to his GoFundMe campaign: https://gofund.me/2212bee9

Submitted by Claudio Stabile, LVAAS Scouting Activities Coordinator

Volunteers Blaine Easterwood, Linda Prince, Frank Lyter and Eric Loch represented LVAAS as the Space Fest event

Lehigh Valley Space Fest - Event Report

Contributed by Blaine Easterwood

On May 6th and 7th, LVAAS participated in the first ever Lehigh Valley Space Fest as a presenting partner. This event is an effort of two local NASA Solar System Ambassadors, Todd Sullivan and Marty McGuire, and a host of other volunteers. (Marty gave a TESS presentation at one of our public meetings.)

LVAAS contributed three things to the two day festival: a display table, opportunities for solar viewing, and a presentation. Our display table was the focal point for our public engagement. Here our wonderful volunteers shared information about LVAAS and engaged with the public about all the cool astronomy things. A fan favorite was Linda guiding guests through her awesome “How Big, How Far, How Old?” activity. It was a big hit!

The solar viewing was the highlight of course, and we had an abundance of clear skies to make it great! We shared both white light and hydrogen alpha views with several hundred visitors over two days. As Bob Lafleur says, “Everyone turns into a kid when they look through the telescope.”

The highlight for me (other than hearing one observer's “Wow!” when they saw prominences for the first time) was viewing one of the largest prominences that I have ever seen. (my eyeball estimate is ~1/10th the diameter of the solar disk! If you’re wondering how large prominences can get, NASA recently reported a solar prominence that was as long as the sun is wide. In rough terms.) Lastly, I gave a presentation entitled “Preparing for the 2023 and 2024 Solar Eclipses” to a great audience in a not-so-packed auditorium. (It was a LARGE auditorium with about 20 people in it :)

Overall, it was a great event!

Stargazers Group

Contributed by Kyle Kramm

The first Stargazers Group met at South Mountain on May 12, 2023. There were about 25 people, mostly newer members. Five club members brought their scopes, Sandra Repash donated a Dob, and by the end of the night we had all of them up and running, including 2 of the club’s scopes!

The sky was not the best, but that did not stop us from seeing the Sun, Venus and Mars along with many other objects. There was a good mix of new and more experienced members, so all received the help that they needed. It was exciting to see that some members who had never looked though a scope, had the opportunity to control a telescope and find objects for the first time!

The Celestron StarSense may be my new recommended scope for new members to get started in astronomy, it’s a cell phone guided push-to scope that’s under $230.00. How cool is that?! A big thank you to all who attended, and especially to the more experienced members who came and helped make the event a great success. Let’s keep this wonderful members-only event going! See you next month on June 9 at 7:00 p.m. Members only please!

LVAAS General Meeting ~ Public Welcome!

Sunday, June 11 at 7 p.m. Grady Planetarium

South Mountain Headquarters, *and on Zoom*

"Optics: bringing Photons to your Retina Since 1610"

presented by

Joe Zitarelli

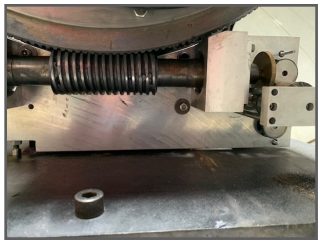
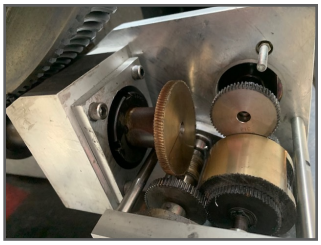
Joe will begin with a brief review of the anatomy and physiology of the human eye. He will then go into various devices used in Astronomy and how their optics vary. Next, he will transition into a discussion of light transmission and how optics and conditions affect what we see and image.

Joe's interest in Astronomy began in high school where there was a planetarium and a 20" Newtonian reflector. Joe further developed this interest in college obtaining a BS in Physics from Penn State University. He then went on to get his MD at Hahnemann University (now Drexel University) then followed by doing a 5-year General Surgery residency. Joe has been a practicing General Surgeon since 1988. After college, Joe's interest in physics and astrophysics continued as he tried to follow the sciences as they developed and made further discoveries. In 2018, Joe learned of LVAAS and became a member to further his knowledge of Astronomy. He presently serves as Secretary of the society.

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

Hi Pulpit Rock Astronomers,

Good news as our astronomy spring season kicks off with a scouting event this weekend. (5/5-5/7.) Rich and I completed the repair of tracking issue on the Tinsley today. We replaced the brass worm gear with a replacement gear which has addressed the issue where it no longer tracked the stars. See attached photos of the small brass gear that was replaced. There will be some work required when dark to adjust the focus via the secondary mirror but should be simple enough under dark skies.

The 12” LX200 is working properly in accordance with the local instructions the book. Ron determined the issue with tracking was due to the setting reverting to alt-az in the hand controller rather than polar tracking. This may be indicative of the battery retaining the configuration needing to be replaced which will be completed on a future date. In the meantime, if it does not track, check this setting in the hand controller. The 17.5” Dob controller is working fine with Sky Safari per the local instructions. It was tested with both iPhones and Android phones. The 3 telescopes are ready for the scout groups this weekend and the deer deterrent is working great and the field is completely clear of deer poop!
I happened to see a deer as he approached the field and got a whiff of the garlic deer deterrent.

Reminder to signup for the lvaas-pulpitrock@groups.io list as the ‘buzz’ email group will be going away.

I included a photo from Pulpit Rock to show you that spring has arrived on the mountain.

Regards,

Frank (Lyter), Rich (Hogg) & Ron (Kunkel)

FOR SALE

Orion Short Tube 80 mm Refractor Telescope

I have this Orion ShortTube refracting telescope for sale that has an 80 mm objective and a 6x30 finderscope with dove tail mount. I do not have eyepieces or a diagonal for the telescope. The scope can mount on most camera tripods. The telescope comes with a box and was hardly used.

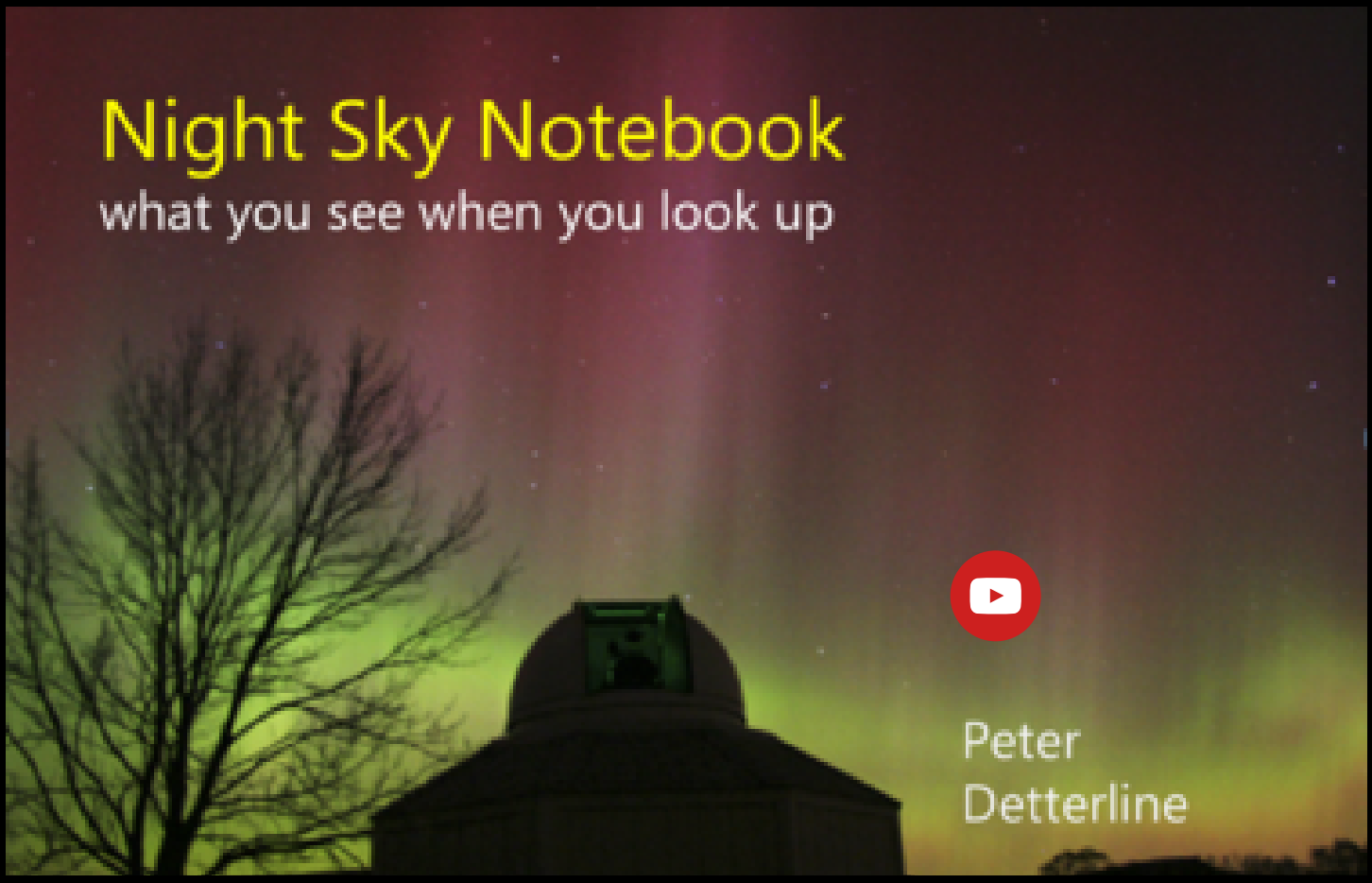
$95

Contact David Raker at **draker@cedarcrest.edu** if interested. I can email more photos if needed. I will bring the telescope to June's general meeting.

Peter Detterline's

Night Sky Notebook

JUNE 2023



NGC 4755 The Jewel Box Imager: Peter Detterline

Imaged by Peter Detterline while visiting Australia to witness the recent eclipse, the Jewel Box is an open cluster in the constellation Crux, which includes the Southern Cross. It was nicknamed 'The Jewel Box' by John Herschel, to describe its telescopic appearance as "a superb piece of fancy jewelry."

https://www.constellation-guide.com/jewel-box-cluster/

A History of The Knecht Observatory

By George H. Maurer, 1998. Revised by Sandy Mesics 2022

The Knecht Observatory located atop the South Mountain headquarters building that houses our six-inch refractor was the first observatory built by LVAAS members. It is named for the late Dr. D. George Knecht, who was an avid amateur astronomer, an amateur telescope maker, a clock maker, poet, and a long-time dentist in Allentown. His office and home were on N. 9th street, near the PPL building.

George Knecht and his 6-inch refractor, circa 1960.

Dr. Knecht and the late LVAAS member Ralph Schlegel were active with the original Allentown based Lehigh Valley Astronomical Society (LVAS) that was organized in the 1930's. Despite its twenty-year existence, the LVAS had no permanent meeting place and when the Lehigh Valley Amateur Astronomical Society (LVAAS) organized and established plans to build on South Mountain, they chose to join with us.

After grinding and completing some telescope mirrors and assembling them into telescopes, Dr. Knecht set his mind to make a six-inch achromatic lens for a refracting telescope. Now, it should be mentioned that this is a far more difficult task than making a telescope mirror as four surfaces must be finely finished with their optical curves in alignment compared to having just one surface as in the case of a telescope mirror.

Construction of the South Mountain Headquarters began in 1959. At about this time, Dr. Knecht gave the Society his completed 6-inch refractor. The Society was of course deeply grateful for this and when the shell of the building was completed in 1959, a pier was mounted outside in an area on the east side of our lot where the telescope was often set up for observing. This proved to be a geat incentive for the membership and plans were made to build a proper observatory for the instrument.

Ralph Schlegel and George Knecht and the 6-inch scope at South Mountain.

In spring 1960, construction was begun on the back room, which currently houses the furnace room, the shop, the Red Shift store, and the Knecht Observatory. This construction was literally a hand-made operation. A crew of enthusiastic members met faithfully on Friday evenings and Saturdays and not only erected the building but also hand hammered out sheets of aluminum on wood forms to form the sections of the dome. The observatory was completed in spring 1961. Originally, the observatory had a door that opened onto the flat roof over the workshop. But when the roof was peaked, a new opening was created into the attic storage space.

Before the telescope was mounted in the finished observatory, it went through a complete metamorphosis. A well-made equatorial mount from a Clark refractor (likely the mount from Lehigh University's Sayre Observatory) was combined with an accurate clock drive. A new tail end was finely machined in brass and a focusing eyepiece holder added along with finder scopes. The original objective lens was replaced with a coated A. Jaegers objective lens that has proven to be of excellent quality. By the end of 1962 it was reported that the Knecht refractor had a new rack and pinion, diagonal, and machining and brass work by Earl Bodder (see *The Observer* blurb, next page).

The observatory was officially named after Dr. Knecht in his honor in 1962 and was proudly displayed at the official dedication of the LVAAS headquarters building in September 1963.

Construction of the Knecht Observatory. 1961-1962.

SOCIETY NEWS:

The six-inch refractor is now definitely in operating condition. The rear end, embodying a massive rack and pinion mechanism, a diagonal and adapters for eyepieces of 1¼ inches up to two inches, is a beautiful bit of machining and brasswork by Earl Bodder. The dome slit is hand operated (you just pull a chain) but the dome itself turns mechanically at the flick of a switch. At present the objective lens is being kept in the safe with the ten-inch mirror because of the possibility of 22 caliber snipers. However, a steel jacket that will fit over the end of the tube is being made which will permit leaving the lens safely in place. Ladies and gents: we have ourselves a beautiful instrument! Now let's use it.

Notice from *The Observer* November 1962.

Dr. Knecht was in his 86th year when we dedicated the observatory in his name. He was moved to write a poem in celebration of its completion. This was published in the April 1962 issue of *The Observer* and is reprinted here:

The Observatory

Up on the Lehigh mountain top
Close to the cairn of mountain rock
An Observatory was built by men
Who built the Shrine like as builders can?
A dozen telescopes are now shown;
The members here all built their own
The telescopes are all "first class,"
Made with rouge on polished glass.
The Moon is always very high.
Out in deep space the Meteors fly.
Are planets high? Called "dose to home",
Move free in the celestial dome.
We scan the sky in outer space,
The brightest star with glowing face.
The planets move! The stars will stay
One hundred million miles away.
D. George Knecht, 1962

Over the years the Knecht Observatory has been lovingly maintained by LVAAS. Thousands of people have viewed the heavens through the 6-inch refractor at public star parties, and many members have used this instrument to learn how to navigate and observe the heavens. During the 1960s, it was used for astrophotography both through the instrument and by mounting a camera to the optical tube and using the telescope as a guide scope. In the early days of digital astro-imaging the scope was used for lunar and planetary imaging. Looking through the observatory's logbook is a delightful exercise in LVAAS nostalgia.

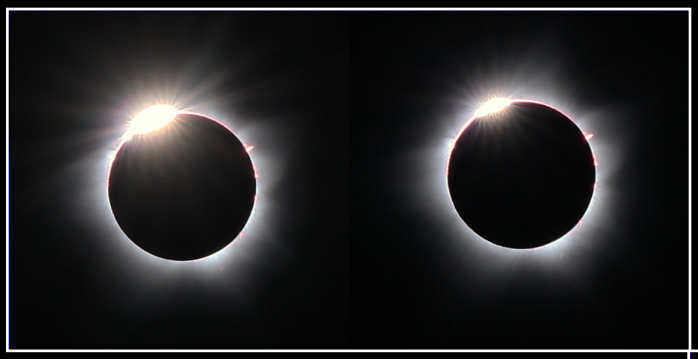
When the observatory was first built, very few amateur astronomers had the means to own such an instrument. Using the Knecht Observatory was considered an honor and privilege of LVAAS membership. These days, most members have instruments that far exceed the capabilities of the Knecht refractor. Yet, even after 60 years, it remains the workhorse observatory at South Mountain.

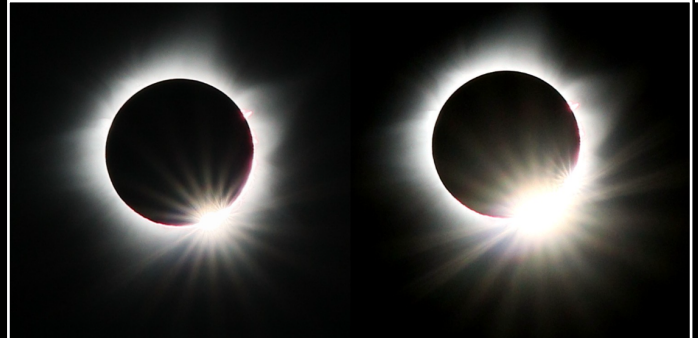
StarWatch

Success in Viewing the Australian Solar Eclipse

For those individuals who have never had the opportunity of viewing a total solar eclipse, when the moon passes centrally in front of the sun, and day rapidly changes into the near darkness of night, it is something that you want to put on your bucket list. Canada, Hawaii, Africa, and many central eclipses across the continental US, and now Australia have been my stomping grounds for eclipse chasing. * Why travel halfway around the world to see an eclipse? Solar eclipses can only occur when the moon is new and that means for a week after new, Luna is not bright enough to hinder observations and imaging of the night sky. My friend, Peter Detterline and I had a house rented near Franklin River, Western Australia for six nights to accomplish those goals. Although I had been to Australia 23 years earlier to photograph the stars of the Southern Hemisphere from Oz's Siding Spring National Observatory, the digital revolution had made those images obsolete. I also had never seen the central bulge of our Milky Way Galaxy on my first trip because I had been to Australia during late summer when the galactic hub was just rising as morning twilight interfered. * So here I was on the deck of the P&O *Pacific Explorer* ready to observe an eclipse that was different from any other that I had experienced. It was a hybrid, starting and ending as a ringed (annular) eclipse with the moon's main shadow, the umbra, too distant from Earth's surface to create totality. As the moon's shadow raced across the Indian Ocean, the Earth bulged towards the moon, allowing a narrow oval of darkness to continue sprinting across the sea to rendezvous with us on the eastern waters of Australia's sunny North West Coast. * Because the shadow was so narrow, only 40 miles along its minor axis, this totality was going to be extremely short, 60 seconds of darkness, before the light of the sun would again return. * The partial aspects of solar eclipses are pretty standard. They begin with the faster moving moon overtaking the slower moving solar disk. This takes place during an approximately 80-minute interval and is not excessively exciting except for the anticipation of totality that will be occurring imminently. Somewhere between 10 to 15 minutes before darkness, the sun's light noticeably begins to fade. During this interval, the sky becomes a more saturated blue, sometimes even taking on a grey or purplish hue. Shadows weaken, but become more distinct as the solar crescent narrows and acts more like a point source of illumination rather than a broad disk. In the direction of the oncoming shadow, the sky can darken like an advancing thunderstorm, but this was less evident because of the narrowness of the umbra. About two minutes before totality, the light can start to pulsate or ripple from the contracting slit of sunlight passing through different temperature layers of Earth's atmosphere, a phenomenon known as shadow banding, but again I did not witness this elusive phenomenon with this hybrid eclipse. * During the last minute before darkness, it seems as if someone is turning down a giant dimmer switch as the sun's light noticeably fades moment by moment. The moon appears like a diamond ring created by the outer atmosphere of the sun, the corona, now visible against the last jewel of sunlight to disappear. * Prominences created by fluorescing hydrogen gas arcing from the sun's limb were noticeably visible, as well as the middle layer of the sun's atmosphere, the 2000-mile-deep, magenta chromosphere. Because the moon and the sun were so close to being the same apparent size in the heavens, the diamond ring was broad and long-lived. * As the brief night of totality blanketed the *Pacific Explorer*, the ecstatic cheers, hoots, and screams of more than 2000 passengers and crew added a surreal and primal quality to the experience. I know now to expect it, but I'm still surprised and inspired by its intensity every time I experience a total solar eclipse with a large group of novice observers. The awe and majesty of this event just seems to be a part of our human DNA, as everyone is surprised by the sudden darkness. Pictures cannot convey the rush of excitement or the sensations that pulsate through your body during the totality experience, but **here** are a few images that I took which may capture some of the beauty and encourage you to want to view one of these inspiring events for yourself. More stories about my adventures in Australia next week. More about eclipses next week. Ad Astra!

©Gary A. Becker -- beckerg@moravian.edu or garyabecker@gmail.com
Moravian University Astronomy - astronomy.org also facebook.com/StarWatchAstro/





Please visit Gary's website, astronomy.org, for full-size images and descriptions of the eclipse.

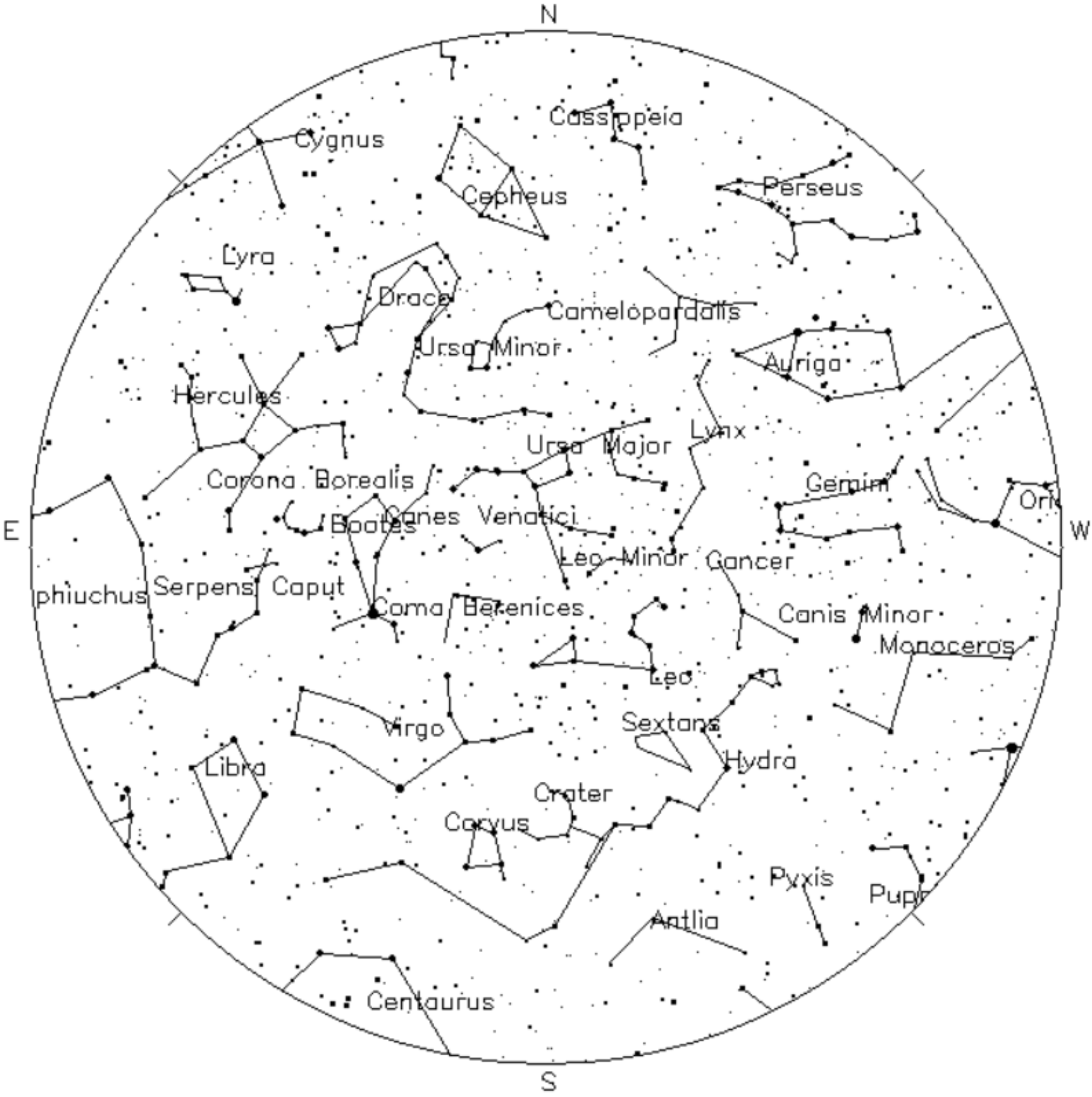
JUNE 2023

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

JULY 2023

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

Sky Above 40°33'58"N 75°26'5"W Friday, June 2, 2023 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

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

2023 LVAAS EVENT CALENDAR

Contributed by Bill Dahlenburg

2023 LVAAS Event Calendar												
	Sundays				Saturday		Multi-Day Weekends	Moon Phase			
	General Meeting time	location	Board meeting	Astro-Imaging	Star Parties	Scouts at S. Mountain	Scouts at Pulpit R.	New	1st	Full	3rd
January	8	3:00 PM Muhlenberg	29	no meeting	no meeting		no camping	21	28	6	14
February	5	3:00 PM Muhlenberg	26	no meeting	no meeting		no camping	20	27	5	13
March	12	3:00 PM Muhlenberg	26	no meeting	25		no camping	21	28	7	14
April	2	7:00 PM S.M.	30	22	29			20	27	6	13
May	7	7:00 PM S.M.	21	20	27			19	27	5	12
June	11	7:00 PM S.M.	25	10	24			18	26	3	10
July	8	5:00 PM S.M.	30	15	22			17	25	3	9
August	12	7:00 PM Pulpit	27	19	26			16	24	1 & 30	8
September	10	7:00 PM S.M.	24	9	23			14	22	29	6
October	8	7:00 PM S.M.	29	14	21			14	21	28	6
November	12	2:00 PM S.M.	26	11	18			13	20	27	5
December	9	2:00 PM ?	17	16	no meeting		no camping	12	19	26	5

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 (TBD)

NEAF	4/15 – 4/16
MEGA MEET	8/11-- 8/13
CSSP	6/15 – 6/18
Stellafane	8/17 – 8/20
BFSP	9/15 – 9/17 ??

Publishing images is a balancing act!

When preparing your images for publication in The Observer, please consider the following guidelines:

Put the quality in:

- Considering the "print" size of the image, make sure you have at least 150 pixels/inch.
- Use a reasonably good quality for the JPEG compression ratio.

But watch the "waistline"!

- Don't go too much above 200 pixels/inch max.
- Use the lowest JPEG quality that still looks good!
- Shoot for <300KB for a 1/2 page image or <600KB for a full page.

Tip: If you're not Photoshop-savvy, you can re-size and compress undemanding images ("human interest" not astroimages), with an online tool such as: https://www.ivertech.com/freeOnlineImageResizer/freeOnlineImageResizer.aspx. It will also tell you the pixel size and file size of your original, even if you don't download the processed copy.

The Observer is the official monthly publication of the Lehigh Valley Amateur Astronomical Society, Inc. (LVAAS), 620-B East Rock Road, Allentown, PA, 18103, and as of June 2016 is available for public viewing. Society members who would like to submit articles or images for publication should kindly do so by emailing *The Observer* editor, France Kopy, at observer@g.lvaas.org

No images of people under 18 years of age will be accepted for publication at this time. 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 are always welcome. Document proofread by Rich Hogg on a monthly basis.

LVAAS members please feel free to submit ads for astronomy equipment you have for sale, and additionally you may sponsor a maximum of three ads from non-members per year. Please submit your finished ad as a PDF, with pictures and text**.** Every attempt will be made to include submissions in a timely manner.

Every effort will be made to properly credit the sources of the material used in this publication. If additional credit is required, please notify the editor at observer@g.lvaas.org

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