

The Observer



The Official Publication of the Lehigh Valley Amateur Astronomical Society

<https://lvaas.org/>

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September 2021

Volume 61 Issue 9



AD ASTRA *****

The position of Star Party Coordinator still remains open. If anyone is interested in this position, please contact me at director@lvaas.org

Speaking of volunteering you should know that the election of officers is coming up in October. Nominations for all positions are due by the September General Meeting. If you are interested in becoming an LVAAS officer, please contact Bill Dahlenburg at sm_maintenance@lvaas.org to volunteer.

On September 25, LVAAS members are invited to a guided tour of the Planet Walk in Allentown by Ray Harris. The Planet Walk is a scale model of the Solar System stretching 3,676 feet along the Bridle Path in Allentown's Little Lehigh Parkway. The Planet Walk is designed to a scale of one foot equaling one million miles. At this scale, the Sun is about 10 inches wide, Jupiter is about one inch wide, and Pluto is a tiny period at the end of this sentence. While the planets are small, their actual average distance from the Sun at this scale is quite large. The Earth is 93 feet from the Sun (93 million miles) and Pluto is nearly three-quarters of a mile away! At this scale, to reach the nearest star, you would have to travel to Hawaii.

LVAAS erected the Planet Walk in December of 1996 as a memorial to the late Rev. Dr. Ernest F. Andrews a former Director. Ernie was a member of the Society for nearly 20 years and his contributions to the Society were many, but his love of the heavens and the warmth he showed to all members, new and old, were his legacy. Ray Harris has recently spent \$600 of his own money to re-do the Planet Walk signage. After discussion, the board voted to approve re-imbursing Ray for his expenses in maintaining the Planet Walk.

There have been no changes to the state of Pennsylvania pandemic restrictions, so the BOG has approved the following additional activities for **LVAAS Members Only**:

- ✓ Star Party at South Mountain September 11th
- ✓ Astro-Imaging September 25th
- ✓ Star Party at South Mountain October 9th
- ✓ Astro-Imaging October 23rd
- ✓ Star Party at South Mountain November 13th

Interest in astronomy as an outdoor hobby has picked up over the past year. This can be seen by the limited availability of new equipment. Also, if you were thinking of registering for the Black Forest Star Party on October 1ST, 2ND and 3RD, 2021 and have not done so you are too late. Registration for BFSP 2021 is now closed as they have reached capacity.

Ad astra!

Thomas Duff



View from Pulpit Rock Sept 5-6, 2020.
Imaged by Frank Lyter.

Nomination Of Officers Of LVAAS For 2022 Term

Nominations for the LVAAS officers will be accepted through the close of our September 12th general meeting.

LVAAS full members in good standing (current dues paid) are entitled to vote and/or be considered for office.

Nominations will not be accepted nor shall additional nominations be placed on the ballot after the close of nominations during the September 12, 2021 General Meeting.

Nominees to date:

Director: Thomas Duff

Assistant Director: Richard Hogg

Secretary: Michael Huber

Treasurer: vacant

Please contact me at the address below should you have questions regarding any of the positions above, or if you may be considering an elected position.

Regards,

Bill Dahlenburg -Nominating Committee Chairman

sm_maintenance@lvaas.org



Minutes from the LVAAS General Meeting – August 7, 2021

The August 2021 LVAAS General Meeting was held in person at Pulpit Rock. We had 40 attendees. Gwyn Fowler ran the meeting and Rich Hogg introduced the speaker, Frank Lyter. Frank Lyter gave a demonstration of how to use Stellarium. After the presentation, members had the opportunity to check out Stellarium on the laptops set up with the software.

Membership Report: Gwyn Fowler

We had great new member turn out (14 new members). These members had the opportunity to tour our observatories at Pulpit Rock. The meeting started at 7:30 PM to accommodate new members getting tours of the observatories.

Second Readings:

John Bilecki

First Readings

Timothy Skoraszewski

Annie Skoraszewski

Alex Krizel

Benjamin Long

Barbara Long

John Paul

Cleon Swartzentruber

Mark Poserina

Treasurer's Report: Prepared by Gwyn Fowler presented by Scott Fowler

General Fund income since the last report (in June) is \$766.04. General Fund expense was \$7,322.83. This includes an annual payment for property and liability insurance of \$6,125.00 and a \$1,001.33 pre-payment for heating oil for the upcoming heating season. The Red Shift had \$85 in sales and \$140.34 in expense. The expense was for the July picnic. We received a donation of \$250 that was designated for educational projects, so I have created a Fund for education. There was an anonymous member donation of \$1000 to the PRoD Fund.

Bylaws: Gwyn Fowler

We had 23 full members present to vote on the bylaw amendments. We needed at least 21 full members for a quorum. Gwyn discussed the changes to the bylaws. No one had questions or concerns, so Gwyn made the motion to accept the Bylaws as written and called the vote. A majority (22 members) voted to approve the bylaw amendments as written by the Board of Governors.

Elections: Gwyn Fowler

We have our election coming up at our October General Meeting. We are seeking candidates to run for Director, Assistant Director, Secretary and Treasurer. If you are a full member interested in running for office please contact Gwyn Fowler or Bill Dahlenburg, who is in charge of the nominations committee. Currently we have the following members running:

Director: Tom Duff

Assistant Director: Rich Hogg

Secretary: None

Treasurer: None

General Comments:

Preston Smith has been appointed as chair of the Member Services Committee. He will be looking for volunteers to help run the Red Shift during LVAAS events. If you are interested in volunteering please contact Preston.

With the Bylaws being approved we now have an opening on the board for the chair of the Star Party Committee. If you are interested in chairing this committee please contact Tom Duff.

We received a \$20 donation from some hikers. The hikers got lost and a member drove them back to Blue Rocks. The member passed on the donation to the Society.

Gwyn received \$61 for keys at the meeting.

The meeting was adjourned at 8:15 PM.

Submitted by Gwyn Fowler, Treasurer

LVAAS General Meeting: Online Only via Zoom.

Saturday, September 12, 7:00 p.m.

The Search for Extraterrestrial Intelligence (SETI): An Insider Perspective

presented by

Sofia Sheikh, PhD



SETI is one of the most fascinating astronomical disciplines, but also one of the most misunderstood. This talk will walk through the various considerations and methods used by researchers when searching for extraterrestrial intelligent life in the universe. What do we mean by "intelligence"? What strategies do we employ in the search? What are the potential pitfalls? And why haven't we found aliens yet? In addition, I'll give a brief overview of some of my recent projects and papers to show what a modern SETI search looks like.

Dr. Sofia Sheikh is a postdoctoral scholar at the Berkeley SETI Research Center. She received her undergraduate degrees in physics and astrophysics from the University of California, Berkeley in 2017, and her PhDs in astronomy and astrobiology from Penn State in 2021. Her research focuses on searches for radio technosignatures, but her interests also include pulsars, fast radio bursts, and technosignatures / astrobiology more broadly.

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

Via Earl Pursell, UACNJ Liason: Presentations through October 2021

UACNJ provides FREE public programs at our Observatory in Jenny Jump State Forest from April through October on Saturday evenings. For the safety of the public and our volunteers, we will be operating the observatory much as we did last year: the entire event will be held outdoors with masks and social distancing required. Weather permitting, an astronomy presentation begins at 8 p.m. As you will be outdoors, please bring a chair or blanket to sit on and be prepared for cool weather. The presentation is followed by some stargazing and we will have screens set up to show live video from the observatory's telescopes until 10:30 p.m. These public programs are free but donations are appreciated. Note admission is limited and by reservation ONLY. For more information and free registration see our website: <http://www.uacnj.org/index.php>. Reservations for the following week's program go on sale Sunday at 12 noon. Please join us or watch our presentations online at youtube.com/UACNJ

Via Dave Raker: New Library Material

DVDs:

Clif Ashcraft: Speckle Interferometry of Double Stars
Moon Machines: Lunar Rover
NOVA: Einstein's Quantum Riddle
NOVA: Looking for Life On Mars

Books:

The End of Everything by Katie Mack
Light In the Darkness by Heino Folcke
Stars and Planets 2nd ed. by Joachim Ekrutt
Earthrise by Edgar Mitchell
Sally Ride by Lynn Sherr

Via Ron Kunkel and Blaine Easterwood: Plate Tectonics in our Solar System Talk

Ron and Blaine both recommend this talk by Dan Davis; watch:
<https://www.youtube.com/watch?v=dE0lxqE0SIo>

Via Earl Pursell: Lockheed-Martin Spacemakers Podcast

"We're launching a podcast on Wednesday, Sept. 1, to take YOU behind the scenes of some of the greatest space exploration missions of our time, and to chat with our experts about how these missions are shaping the future of space..." click [here](#)

Also, Dark Skies Talk by Douglas Arion: <https://www.youtube.com/watch?v=zf9Lj5bymd4>

Benefit from giving to LVAAS through your IRA!

If you are 70 1/2 or older, you can make a charitable gift directly from your IRA to LVAAS without paying income tax on the withdrawal. State laws about Qualified Charitable Deductions (QCDs) and how QCDs are handled vary. If interested, please consult an adviser so you can help LVAAS today!

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



Cover image: Messier 16 - the Eagle Nebula. Imager: Sandra Repash

Photographed in Hydrogen Alpha at LVAAS South Mountain Astronomical Park on July 15, 2020, M16 lies in the Sagittarius Arm of the Milky Way in the constellation Serpens. It is also known as the 'Star Queen Nebula' or 'The Spire' both of which refer to the darker silhouette near the center made famous by the Hubble Space Telescope's photographs known as the 'Pillars of Creation'. It is 7,000 light-years distant from Earth and a mere 5.504 million years old. The nebula is approximately 70 light-years x 55 light-years. Acquisition details: Stellarvue 102T refractor, Atik 414ex monochrome CCD camera, Celestron AVX mount, Astrodon 5nm Ha filter. Thirty two minutes of exposure (16 light frames at 120 seconds each) processed in Deep Sky Stacker and Adobe Photoshop CC with the Neal Carboni plug-in. No darks or flats. Waning Crescent Moon.

You're Invited to A Planet Walk!

LVAAS members are invited to join Ray Harris for a 25th Anniversary guided tour of the Planet Walk in Allentown on **Saturday, September 25th at 1:30 p.m. with a rain date of Sunday, September 26th at 1:30 p.m.**

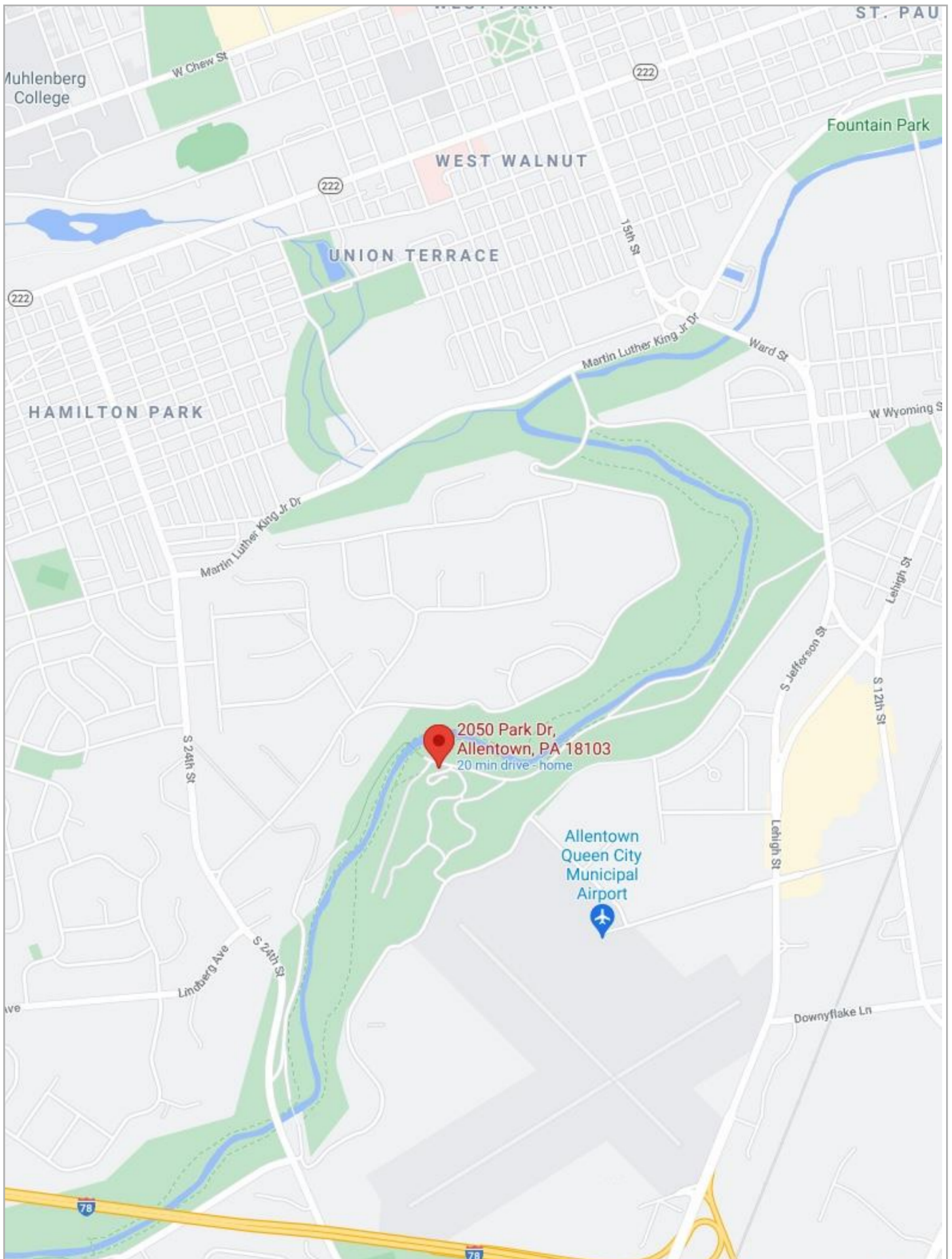
The Rev. Ernest F. Andrews Memorial Planet Walk is a scale model of the Solar System stretching 3,676 feet along the Bridle Path in Allentown's Little Lehigh Parkway. The Planet Walk is designed to a scale of one foot equaling one million miles. At this scale, the Sun is about 10 inches wide, Jupiter is about one inch wide, and Pluto is a tiny period at the end of this sentence. While the planets are small, their actual average distance from the Sun at this scale is quite large. The Earth is 93 feet from the Sun (93 million miles) and Pluto is nearly three-quarters of a mile away! At this scale, to reach the nearest star, you would have to travel to Hawaii.

The LVAAS erected the Planet Walk in December of 1996 as a memorial to the late Rev. Dr. Ernest F. Andrews. Ernie Andrews was a member of the Society for nearly 20 years. His contributions to the Society were many, but his love of the heavens and the warmth he showed to all members, new and old, were his legacy. The Society has named one of its observatories at Pulpit Rock for Ernie Andrews, and the wonderful poem he wrote for the dedication of the Spacek Observatory (also at Pulpit Rock) is proudly displayed for all who pass by to read.

The Planet Walk was erected with funds donated to the Society by his friends and fellow LVAAS members. The LVAAS would like to acknowledge the efforts of Ray Harris (who promoted the plan to build the Planet Walk, came up with the basic design, and arranged for the assistance of the Allentown Parks), Ernie's daughter, Priscilla Andrews (another LVAAS member who wrote much of the text for the Planet Walk), and the Allentown Parks Supervisor (who enthusiastically embraced the idea and approved the use of the Little Lehigh Parkway as well as providing the posts, the assembly of the signs, and the placement of the posts along the Bridle Path).

Priscilla recently commented, "I'm so happy the 'Walk' is still alive and kicking, thanks mostly to the dedication of the great Ray Harris. As I live in Reading now, I would rarely have the thought of visiting the Planet Walk were it not for this welcome invitation. Unfortunately, I seem to be following my Dad's proclivity of unsteadiness on my feet, so I won't be attending. My brother Earl and his wife, Chris, have taken up the gauntlet by helping Ray and Barb with recent repairs as well as checking in on the walk through the years. Thanks to everyone! I'm sure my Dad would be holding back the tears to see how he has inspired the camaraderie of such wonderful people."

The Planet Walk is about 0.7 miles from start to finish. It's about a 1.6-mile round trip from the parking lot on an unpaved path (marked Little Lehigh Parkway Path on the image below) so folks should be prepared for the walk. You can set your map app to 2050 Park Drive, Allentown, PA 18103. We suggest you enter from Jefferson St., and **not** the back way in from 24th St.



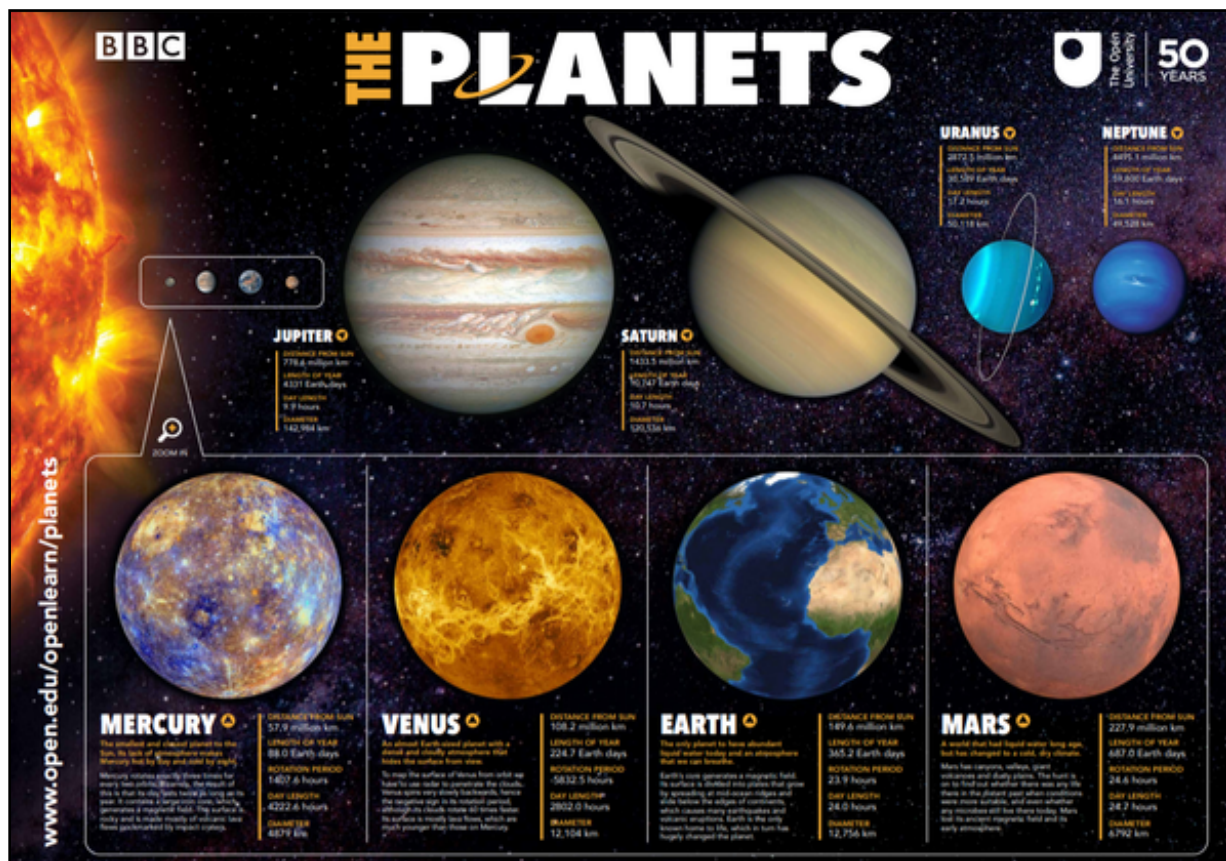
We will meet in the parking lot of the Little Lehigh Parkway. To get there, enter the Little Lehigh Parkway from 15th Street in South Allentown (Also called Jefferson St.) About one mile into the parkway, you will reach a steel bridge with a white house to the left and a parking lot to the right. Park in the lot and walk toward the water where you will see a sign pointing along the Bridle Path and taking you under the steel bridge. Here you will find the beginning of the Planet Walk with the inner Solar System including the Sun, Mercury, Venus, Earth and Mars.

Here is a link from the LVAAS website: <https://lvaas.org/page.php?page=PlanetWalk>

Contributed by Sandy Mesics

Download a free "The Planets" poster here:

<https://www.open.edu/openlearn/tv-radio-events/tv/download-your-free-the-planets-poster>



FOR SALE

3.5 " classic Questar telescope



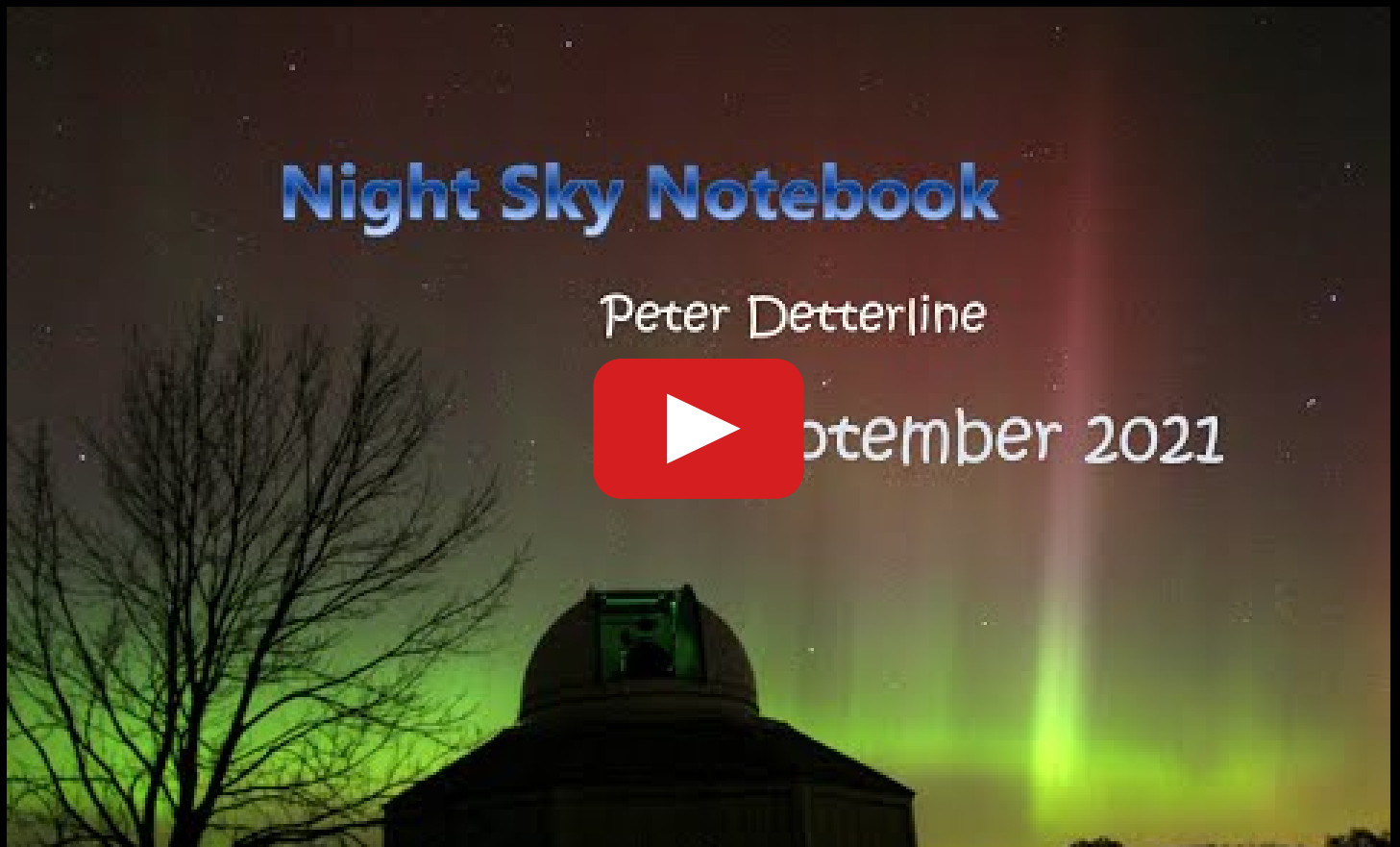
It is a catadioptric apochromatic variable focal length telescope. It comes with two eyepieces (25 mm EFL and 10 mm EFL), a solar filter, legs for forming the tripod, power cord, and the case. The telescope and mirror are in nice shape and the clock drive runs. The number on the base reads 0-9953. I think it is at least 25+ years old.

\$2,300

If interested or you want to see more photos, contact David Raker: draker@cedarcrest.edu



Night Sky Notebook
for
SEPTEMBER
by Peter Detterline



Schlegel Observatory Report

by Rich Hogg – September 2021



One of my main activities this month was to get closer to the final design for the main baffle tube for the 40-inch telescope. I and a few others have already been hunting around for the materials to make this component out of, and we need to know exactly what dimensions we want in order to proceed.

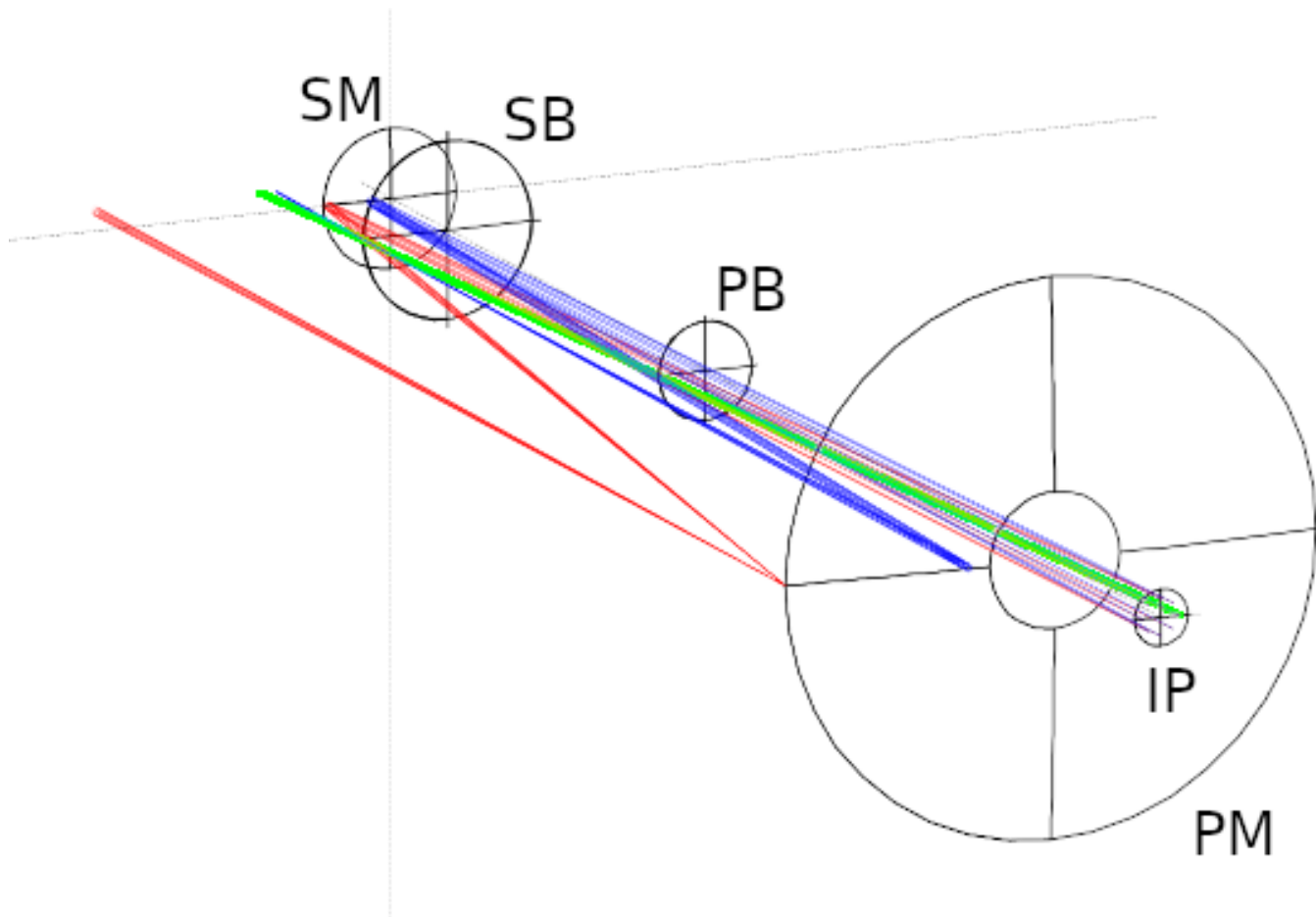
It's not completely straightforward, as there are trade-offs to be made, and the final design may depend on the raw material we can obtain. At this point I am pretty sure we want a thin-wall tube that is almost exactly 7 inches in diameter, and a bit less than 66 inches long.

I started out thinking that I wanted aluminum, but I am pretty close to giving up on that. It just seems to be really hard to find in the right form factor, though I still have one or two leads to check out. I also found a source for fiberglass tubes that seems promising, but I was worrying about how to join a thin-wall fiberglass tube to an aluminum mounting plate so that it would be strong, rigid, and durable. (The difference in the thermal expansion coefficients of the two materials seems like it would make this difficult.) But I've realized that the mounting plate doesn't need to be aluminum; it could also be fiberglass, and I think it could be fitted and bonded to the inside of the tube with epoxy, forming a reliable joint.

The geometric relationships between the various elements and the light rays that pass through the system are complicated. The outer diameters of the primary and secondary mirrors, and the spacing between the two mirrors are fixed, as is the position of the image plane. The variables are the diameters and positions of the primary and secondary baffle openings, and the diameter of the image plane. Actually, at the image plane we have two diameters: the diameter of the field that is fully illuminated by light passing through the mirror and baffle system (unvignetted), and the diameter of the field that is fully protected by stray light from the baffles.

To be honest I don't have a complete understanding of these trade-offs. I've developed a feel for them and I have a design that preserves the fully-illuminated field of the un-baffled optical system, and gives a fully-protected field that is slightly larger. Which probably means it is good enough! The only thing to be gained by any refinement would be a probably insignificant reduction in the central obstruction.

I've been using the BEAM4 ray-tracing software to work this out. Here is a diagram of the system generated by BEAM4, which represents the mirror surfaces and the edges of the baffles as black circles. We are tracing the paths of some sample light rays from an imaginary pattern of eight stars, equally spaced around our maximum field of view.



One of the bundles of rays, shown in red, converges from each of the eight sources to a single point at the very edge of the primary mirror (PM). These rays are reflected towards the front of the telescope, and the secondary baffle (SB) is just wide enough to allow them all to get to the secondary mirror (SM). These are our most important light rays. If we lose any of these, we are effectively losing aperture, and we might as well have started with a smaller mirror.

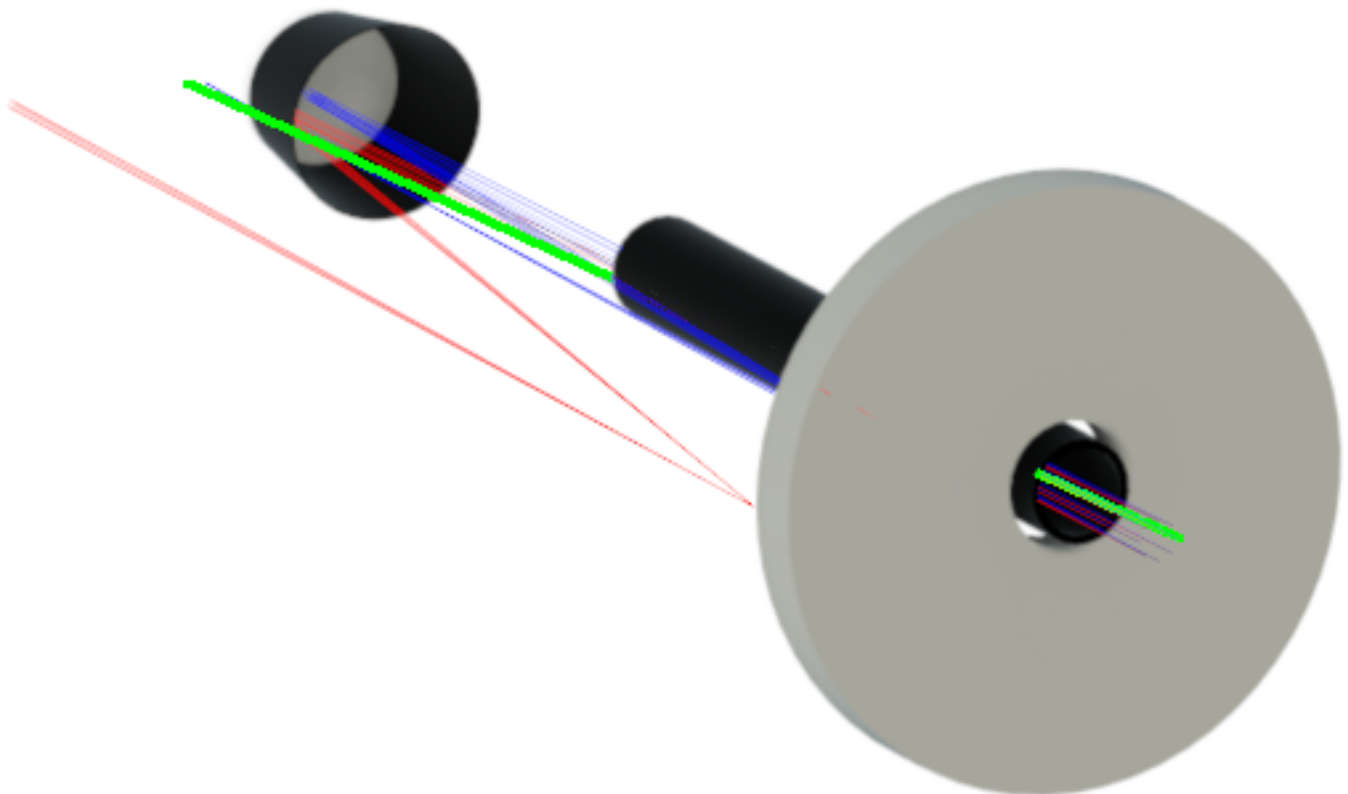
On their way from the SM to the image plane (IP) these rays just make it into the front of the primary baffle (PB). At 66 inches from the back plate and 7 inches in diameter, it's just big enough to get them all.

We're also tracking another bundle of rays from the same pattern of stars, in blue; these just skim the outside of the SB and then, after being reflected from the PM, just miss the outside of the PB on their way to the SM. In choosing the design of the SB we've made a choice about how many of these interior light rays to sacrifice, i.e. how large our central obstruction is allowed to be. It would need to be a bit larger than the secondary mirror in order to allow for a supporting structure, but we will probably give up an additional fraction of an inch to allow for the baffle, and to make the design of that structure easier.

Of course, there is an infinite continuum of light entering the telescope, in between the red rays and the blue ones, and all around the central axis of the instrument, where the rays shown only sample the nine-o'clock position. That's OK. The red and blue rays are a representative sample, and if they get where they need to go, the rest will as well.

I've manually added a fat green line to represent a "parasitic" ray of "stray light" to illustrate the reason for the baffles. If the red and blue rays were really from some dim galaxy we were trying to observe, the green ray could be from a bright star a couple of degrees away from the dimmer target. This stray light reaches the image plane directly, without being reflected and focused by the mirrors, and would reduce the contrast of our image. But to get there, the light needs to miss the SB on the outside while still making it into the PB, and the geometry we have chosen prevents any such light from falling onto the image plane within our design field of view. The green line strikes the image plane a fraction of an inch outside the circle of star images.

Here is another illustration of the simulation, where I've replaced BEAM4's skeletal representation of the mirrors and baffles with opaque renderings.





From the LVAAS Archives:

Mars' Mountains of Mitchel

by Sandy Mesics

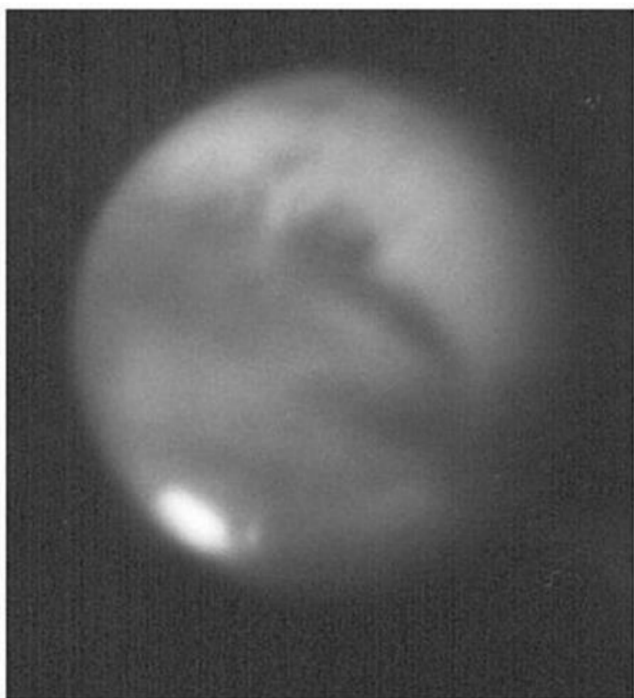
Fifty years ago in the September 1971 *Observer*, avid planetary observer Rodger Gordon reported on his recent observations of Mars. During August, Mars was at opposition, though placed low on the horizon. At that time, Rodger remarked:

“On July 24 [1971], using 3-1/2" and 7" Questars, it was observed that a large rift (appearing as a dark line) in the South Polar cap. Mr. Richardson writes and says rifts were seen a few nights later in the cap. The rift(s) are apparently the “Mountains of Mitchel” as explained in the August issue of the *Observer*. A beautiful photograph of Mars taken by Mr. Richardson with a 7" Questar in rather poor seeing shows Sinus Sabaeus, Sinus Meridiane, Serpentis, portions of Pandora Fietum, Margaritifer Sinus and the South Polar Cap with its ‘melt band.’

“On July 28, more observations of Mars were made and Trivium Charontis and Cerberus “canal” was easily seen. The Eunostos canal was



A young Rodger Gordon with his 60 mm refractor



1971 Photograph of Mars with south polar region tilted towards Earth and "Mountains of Mitchel" to the right of polar cap. Photo by C.F. Capen, Lowell Obs. 24-inch, ID # M880827R1307.

suspected. Filter observations did not reveal any ‘blue clearing’ (temporary transparency of the Martian atmosphere in blue light) to be in effect at this time. The Mare were very dark with red and orange filters but had a distinct pale greenish grey color when viewed in normal light.”

Interestingly, at the time this article was written, closeup images of Mars had been acquired by Mariner 4 in 1965, Mariners 6 & 7 in summer 1969. Mariner 9, the first Mars orbiter, would enter Mars orbit just two months later. Mars was revealed as a cratered, barren world, with no trace of canals.

During July 1971 Mars was experiencing a gigantic dust storm that drove a wall of dust over 30 miles high, and moving at 300 miles an hour, according to observations from Lowell Observatory and Mariner 9. This dust storm was not apparent to Rodger, who wrote in the August 1971 *Observer* “It is possible in

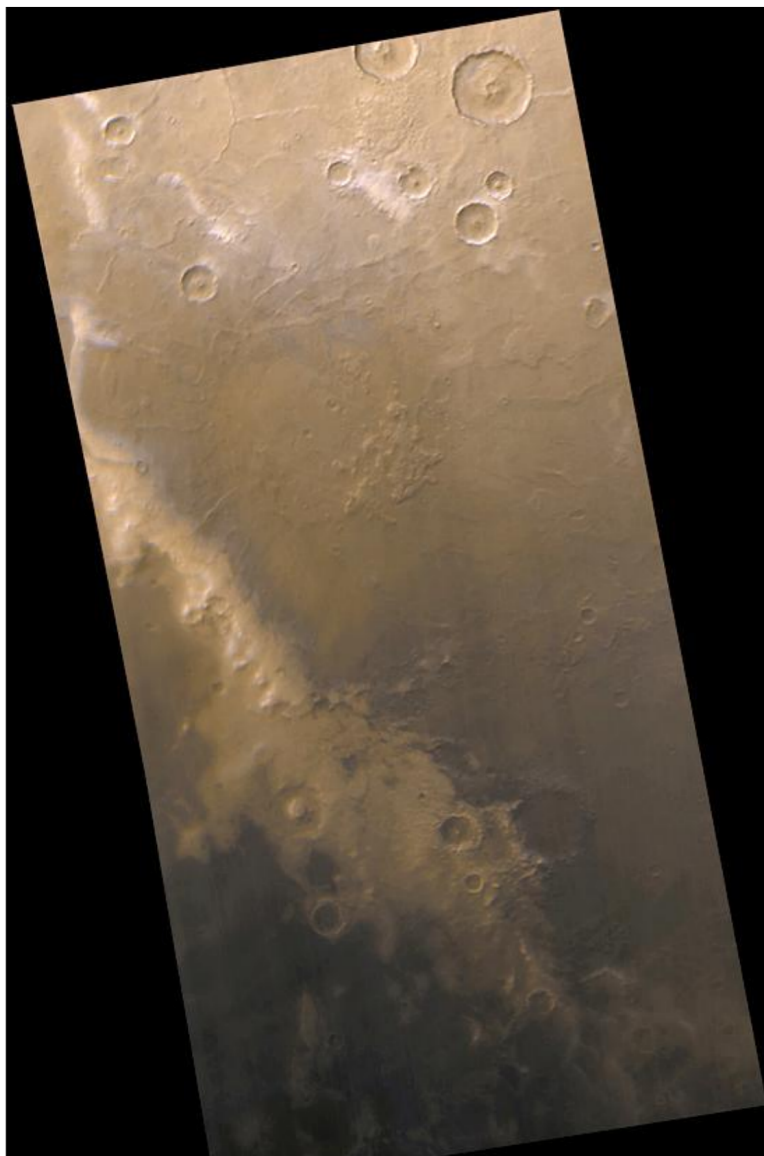
late August or early September to get a repeat of the yellow dust clouds which covered the planet in 1956. So far my own observations (as of early July) indicate a fairly transparent Martian atmosphere though occasional large white patches of frost or cloud have been noted near the sunrise limb."

The Mountains of Mitchel are an interesting Martian feature. According to American astronomer Robert Shirley Richardson in 1957, the Mountains of Mitchel had been observed since at least the 1850s and possibly since 1798. "It appears regularly in the southern Martian spring about a month before the beginning of summer. As the cap melts the rift lengthens until a portion of the cap is completely detached from the main mass. This detached portion gradually breaks up into several small white spots presumably due to snow lingering on elevated ground." He explained that the feature was named by English astronomer N.E. Green in 1879 in honor of American astronomer and Civil War general Ormsby Mitchel.

Richardson went on to theorize that "The startling change in the visibility of the dark rift suggests that it consist of a long cliff facing north and running east and west. When Mars is turned so that we look along the edge of the cliff it would appear as a narrow crack in the polar cap probably too fine to be readily visible. But about six hours later when the planet would be facing us and should be readily seen since we would be looking at it broadside."

The Mountains of Mitchel have also been studied by the Mars Global Surveyor. Images and laser altimeter readings from that spacecraft showed that the region "really isn't so mountainous. Instead, the feature is ... elevated but not significantly." So, if altitude is not the reason, why does the frost stick around?

"I think some of it is the standard explanation that snow lasts longer on slopes that face away from the sun," said Dr. Mike Ravine, an advanced project manager at Malin Space Science Systems. That company operates the camera on Global Surveyor. ... "The south-facing shady slopes explanation probably is not the whole story," he said. "The frost at the so-called mountains seems whiter than it appears at other



**The Mountains of Mitchel. Mars Global Surveyor.
NASA/JPL/MSSS**

places on the seasonal polar cap. There could be something with the local weather patterns, something associated with that particular topography. And maybe you're getting less dust there," Ravine said.

Less dust would mean more light was reflected up from the feature. When Mars has major dust storms, the Mountains of Mitchel regress more quickly than in other years. The hypothesis is that atmospheric dust reduces direct solar heating and increases the absorption of infrared thermal dust emission by the surface. This happened in 2001.

Ravine said its all speculation for now, but you have got to be curious about a frosty feature that has lasted 150 years at Mars.

References

The South Polar Cap. <http://www.alpo-astronomy.org/jbeish/SPR.htm>

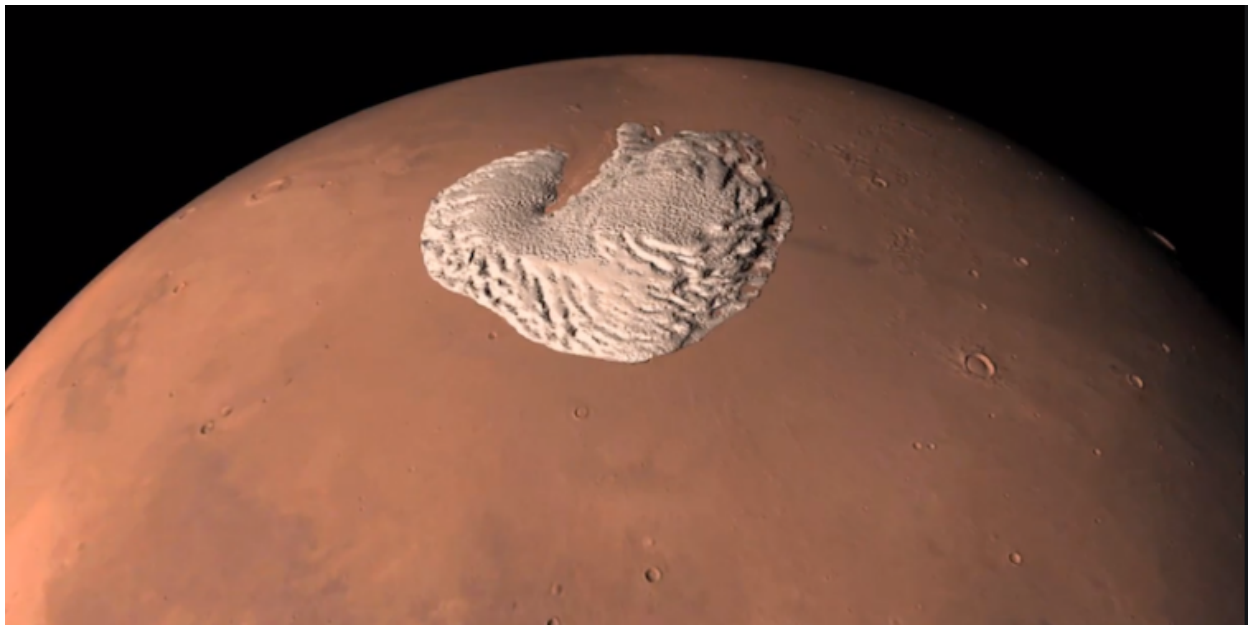
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Frosty Mars 'mountain' poses mystery: CNN 9/22/1999.

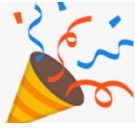
<http://www.cnn.com/TECH/space/9909/22/mars.mountains/>

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<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2002GL015458>



Polar Ice Cap on Mars; source [Space.com](http://www.space.com).



by **Gary A. Becker**

beckerg@moravian.edu garyabecker@gmail.com astronomy.org
facebook.com/StarWatchAstro/ ©Gary A. Becker for StarWatch



StarWatch at 25

September marks a milestone, the 25th anniversary of StarWatch! When I began writing the blog in 1996, I was director of the Allentown School District Planetarium, which was at that time on a very rocky foundation. The District had tried unsuccessfully to close the facility in 1993 because it did not want to pay the facility's operating expenses which amounted to about \$10,000 per year. Strong public support for the program forced the school board to reconsider, but there was a compromise that I agreed to honor. I had to raise the necessary finances to keep the planetarium in operation.

In the beginning, funding was not an issue, with one contributor pledging to donate \$2000 each year, - a promise which was kept until my retirement. However, I was concerned with what would happen when the initial frenzy of assistance waned. The Morning Call solved that difficulty, soliciting me to write a weekly astronomy column that would appear daily in the Weather Section of the paper. I named it StarWatch.

There was no pay involved, but I realized that each week my name and the ASD Planetarium's name would appear in print about one million times. Subscribers eventually picked up on that and support for the planetarium grew. My inaugural StarWatch 0001 appeared in the Sunday, September 2, 1996 issue of the Morning Call. It contained only 86 words. With those constraints it was difficult to say anything meaningful, tell personal stories, or evoke any type of emotional response from my readers. Progressively over the next several years, I was able to expand the column to a maximum of 330 words. In 2003, StarWatch began running nationally in weekly newspapers that were subscribed to AccessWeather.com, a weather forecasting service. In those days, Access Weather composed the Morning Call's daily Weather Page.

StarWatch remains the single most important reason why I was able to keep the Planetarium afloat. During those 17 years of financial independence from the Allentown School District, I raised about \$170,000 to keep the stars shining for ASD pupils. I'm proud of that accomplishment, the role that StarWatch played in achieving financial stability for my program, and grateful for the opportunities that the Morning Call presented to me.

When I left public education in 2010 with my Moravian College contract firmly in hand, I was writing strictly for Access Weather, and it really wasn't much fun. I craved a local audience; the Moravian community filled that need.

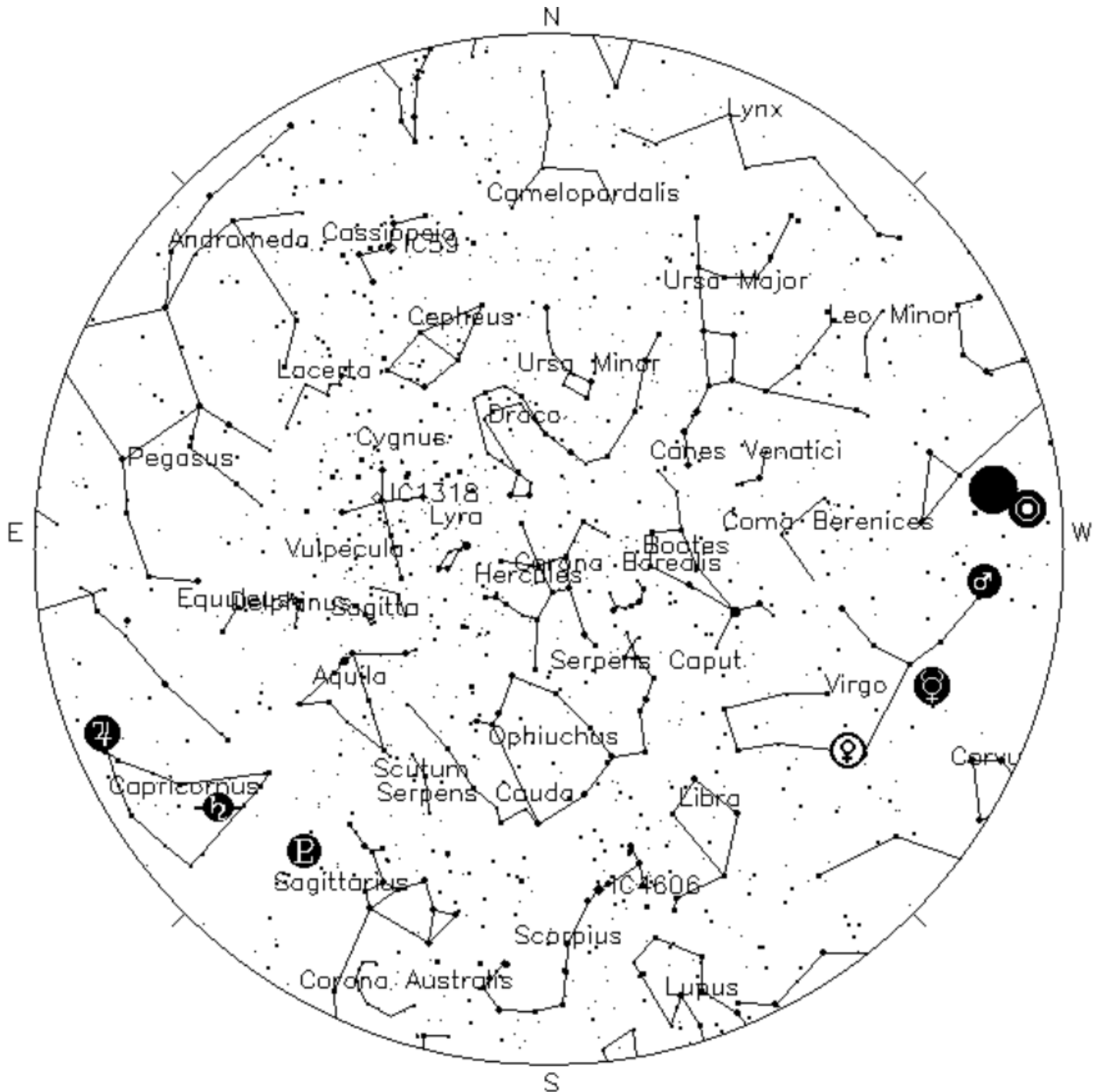
Now with a run of 25 years, which also includes my website www.astronomy.org, I am hoping that *StarWatch* will continue to be successful for a few more years. Besides simply enjoying the creative process, clear and accurate writing allows me to craft better classroom presentations. So I continue on.

My endeavors to pen *StarWatch*, however, do not represent a singular effort. The greatest solace in the process has been Susan, my wife. She was an English teacher when I met her in 1978. At that juncture of my life, I was editing a national publication called *The Reflector*, the quarterly newsletter of the Astronomical League. It had a subscription of about 8500 readers. It was a time-consuming endeavor because word processing and online resources still remained years into the future. The typewriter was the most efficient part of the process. Sue quickly assumed responsibilities as assistant editor, correcting my wonky syntax and making me sound much better. We fell in love, and I knew marriage had to be in our futures because we only argued about grammar. Sue continues those efforts today with *StarWatch*, and I am eternally grateful for her editorial guidance. I figure, if my writing can pass her muster, then it might have a good enough chance of being read by someone else. Thanks so much, Susan. Ad Astra!



C/2020 F3 (NEOWISE) imaged July 14, 2020 by Gary A. Becker

Sky Above 40°33'58"N 75°26'5"W Monday September 6, 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

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

SEPTEMBER 2021

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

OCTOBER 2021

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

Lehigh Valley Amateur Astronomical Society

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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!
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