



The W.A.S.P.

Volume 55 Issue 9

September 2023

The Warren Astronomical Society Publication

Astronomy



At the Beach 2023

September
22 & 23

Recreation Passport or
Park entry fee needed

Bring
Your
Telescopes!

The WASP

Published by
Warren Astronomical Society, Inc.
P.O. Box 1505
Warren, Michigan 48090-1505

Dale Thieme, Editor

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The Warren Astronomical Society, Inc., is a local, non-profit organization of amateur astronomers. The Society holds meetings on the first Monday and third Thursday of each month, starting at 7:30 p.m.

First Monday meeting:	Third Thursday meeting:
Cranbrook: Institute of Science	Macomb Community College
1221 North Woodward Ave	South campus, Bldg. J, Room J221
Bloomfield Hills, Michigan	14600 Twelve Mile Rd.
	Warren, Michigan

Membership and Annual Dues

Student	Individual	Senior Citizen	for families
\$17.00	\$30.00	\$22.00	add \$7.00

Astronomical League (optional) \$7.50

Send membership applications and dues to the treasurer:

c/o Warren Astronomical Society, Inc.

P.O. Box 1505

Warren, Michigan 48090-1505

Pay at the meetings

Also via PayPal (send funds to treasurer@warrenastro.org)

- Among the many benefits of membership are
- Loaner telescopes (with deposit). See 2nd VP.
- Free copy of each WASP newsletter.
- Free use of Stargate Observatory.
- Special interest subgroups. See chairpersons.

The Warren Astronomical Society Publication (WASP) is the official monthly publication of the Society.

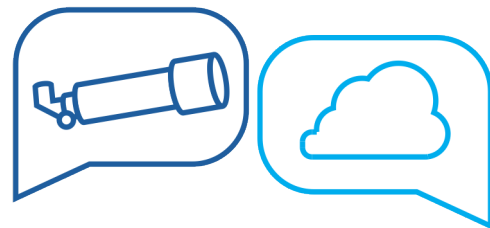
Articles for inclusion in the WASP are strongly encouraged and should be submitted to the editor on or before the end of each month. Any format of submission is accepted. Materials can either be transmitted in person, via US Mail, or by email (publications@warrenastro.org)

Disclaimer: The articles presented herein represent the opinion of their authors and are not necessarily the opinion of the Warren Astronomical Society or this editor. The WASP reserves the right to edit or deny publication of any submission.

Stargate Observatory is owned and operated by the Society. Located on the grounds of Camp Rotary on 29 Mile Road, 1.8 miles east of Romeo Plank Road, Stargate features an 8-inch refractor telescope under a steel dome. The observatory is open according to the open house schedule published by the 2nd VP.

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Discussion Group Meeting

Come on over, and talk astronomy, space news, and what-not!





Field of View

First View!

My granddaughter looked through a telescope at the Moon for the first time this week! She couldn't *quite* reach the eyepiece, so I grabbed the nearest thing that could boost her up. She DID see the Moon... she also grabbed the eyepiece like a handle, and moved the 'scope around, and got all upset when I told her not to do that. She is only 3 and a half, after all...



Credit: Connie Martin-Trembley

The 'scope in the photo has been in my garage, and caught my granddaughter's eye *every* time she came to our condo. She moved it around and knew how to look through the eyepiece - the only explanation I have for how she knew this is she's seen telescopes on several of the cartoons and movies she's watched.

Elections

We have officer elections coming up soon, and several board members are being term-limited out of their positions, or are unable to continue: Treasurer, Secretary, Outreach and Publications.

Dale Thieme is willing to be the "editor behind the scenes" for the newsletter, so the Publications officer position will likely not have a lot of responsibilities.

2nd VP / Observatory Chair - Jeff Macleod has indicated a strong "maybe" to continue in this position, but if anyone wants it, Jeff will gladly show you how it's done!

If you'd be interested in helping run the W.A.S., we'd be very interested to hear from you!

I got THAT question again...

I gave a presentation about exoplanets for the Detroit Public Library via Zoom on August 29th - this is the same presentation I'll be giving for the WAS in October. As is typical with my presentations, I had a LOT of information, graphics and images. When I was done, a member of the audience asked:

"What good is all this knowledge?"

I was caught off-guard, and completely spaced my standard response to that question, but *seriously!* What motivates someone to ask that? What does that question even *mean?* Why does knowledge, *any knowledge*, have to have some perceived "worth" or "virtue" before someone is willing to consider or care about it? Can't something be *fascinating* without having to be advantageous to someone?

**Bob Trembley,
President**

Saw a Fireball?

Report it to the American Meteor Society!



[www.amsmeteors.org/
members/fireball/
report-a-fireball](http://www.amsmeteors.org/members/fireball/report-a-fireball)

Warren Astronomical Society Annual Awards Banquet

Monday, December 11th, 2023
from 6PM to 11PM.

Ukrainian Cultural Center
26601 Ryan Road
Warren, MI

Prices

Before December 4th: \$35.00.

At the door: \$40.00.

Cash Bar

Dinner will consist of three entree selections, two fresh vegetable selections, two potato selections, assorted cold salads, a pasta side, fresh rolls and butter, soft drinks/coffee, and cheesecake with strawberry topping.

STARGATE OBSERVATORY

Special guest speaker: Jon Blum

"You're Made of Star Stuff"

Pre-orders payable by check
(To Warren Astronomical Society, PO Box 1505, Warren MI 48090)
or
PayPal (send to treasurer@warrenastro.org)

X Hercules: Four Periods Identified

By Gerald Persha, La Luz, NM
gpersha@sspdataq.com

X Hercules is a semi-regular red giant that I have been observing for over ten years with a SSP-5a PMT photometer. The light curve is complex with many modes of oscillations apparent. Using software tools available from the AAVSO and the free software Period04, I have analyzed my data and found four distinct modes of oscillations.

More specifically, X Her is an oxygen-rich post AGB (asymptotic giant branch) variable with the designation SRb from the General Catalogue of Variable Stars. It varies in magnitude from 5.5 to 7.0 magnitude in V and is of spectral class M6III - M8III. It has a mass of 1.9 solar masses and is approximately 400 light years from earth.

It is in the last stages of life before it becomes a planetary and then fades into a white dwarf. Our own star will follow in the foot steps of X Hercules many billions of years from now and will eventually turn planetary and light up the view of a future alien astro-imager. The nuclear chemistry of the star's interior as complex as the pulsations perhaps even more so. The core carbon-oxygen core is surrounded by multiple shells of helium and hydrogen with some burning and some inert. The shell of interest for the pulsations is obviously the most outer shell composed of helium and hydrogen at around 3500K. Instabilities which are poorly understood are the cause of the pulsations and the resulting mass loss. Did I forget mention that this star has a circum-stellar shell/disk of dust and gas. It is estimated that the shell has a diameter of 0.8 light years and features a comet like tail. (1)

Past observations of the pulsations have come up with differing results with the frequencies of pulsations. While 101-102 days is the same for all studies and is very dominate in the observed light curve, other periods of 95, 165, 178, 395, 629, 658 were reportedly observed, but I suspect their accuracies. (1) (2) (3)

Figure 1 shows my B and V data for the last ten years as reported to the AAVSO. You can see that the curve is very chaotic and not like a Mira variable which is of the same general class of AGB variables. The raw measurements were processed and transformed into standard Johnson B and V magnitudes using custom software that I developed called

SSPDataq and have errors of less than 0.04 magnitude. The comparison star that I use is BS5830 a 5.76 magnitude F2 star that is listed "constant" by the Hipparcos satellite system with a mean magnitude standard deviation of +/- 0.0006 magnitude from 128 observations over several years.

Figure 2 shows the Period Analysis (power spectrum if you are of the engineering persuasion) of the 240 V magnitude datum points. The program used in the analysis is VPhot a free program from the AAVSO. I got exactly the same results when using Period04 freeware. Put simply, if that can at all be done, the VPhot or Period04 programs use the mathematical principals of Jean-Baptiste Joseph Fourier (1768-1830) to deconstruct any waveform (Fourier transform) no matter how ugly into a series of sine waves with attributes of frequency, amplitude and phase. Figure 2 shows the frequency of the four peaks in units inverse days and amplitude. Phase is not shown.

Figure 3 show the results of the of the Fourier transform (black curve) with the 240 datum points of V magnitude. While the match isn't perfect, there is some convergence to the Fourier transform of the data. It show that there is

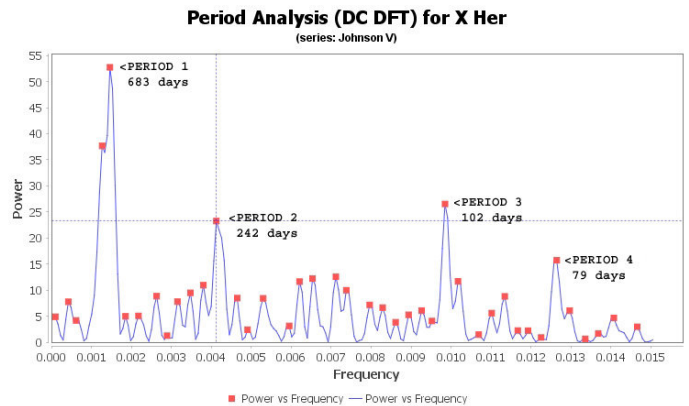


Figure 2

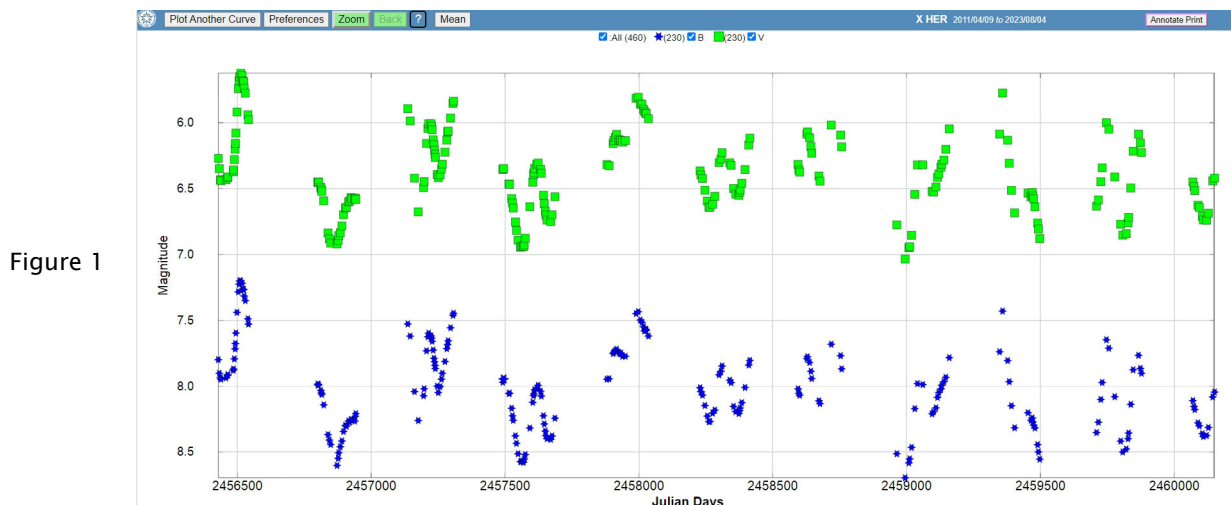


Figure 1

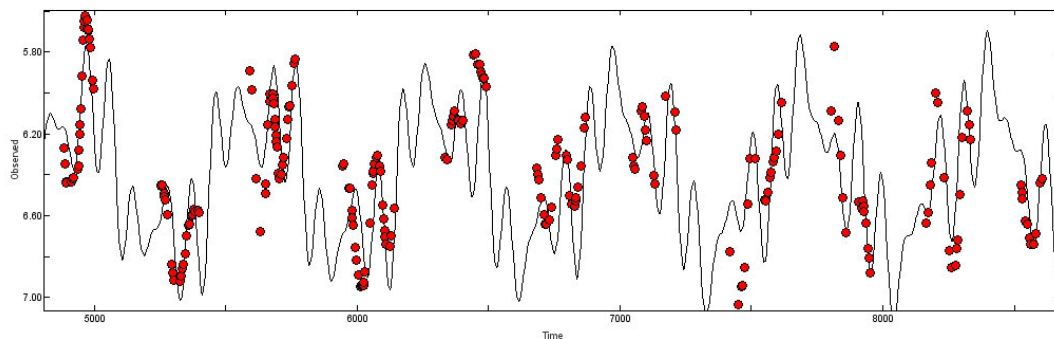


Figure 3

some chaotic behavior going on the convection zone of the star which cannot be modeled exactly as in the case of some other AGB variables.

When I lived in the Detroit area in the 70s, I attended many WAS meetings and hung out with the likes of Frank McCullough, Pete Kwentus, Larry Kalinowski, Jack Szymanski and many others I still remember who are no longer with us. Moved to Lowell, Michigan, in the late 70s and started Optec Inc. a maker of fine advanced astronomy gear. Retired to the land of enchantment (New Mexico) about 7 years ago and built my observatories - one for photometry and the other for spectroscopy. Sorry no imaging done here. Figure 4 shows my photometry observatory opened up with the SSP-5a photometer mounted on the Meade ACF 10-inch. The rig is not fully robotic but almost so. The program SSPDataq runs scripts files which points and centers the star and operates the photometer selecting gain, filter, integration time and initiates the measurement. I sit in the attached control room monitoring the all sky camera, listen to Accuradio and respond to any emergencies. The observatory building in the background is for spectroscopy only and has a 14-inch telescope with a home built grating spectroscope. It too is almost robotic but requires a lot more attention. One of the unique features of this installation is the addition of a Starlight Express AO unit to keep the star image on the slit - being only 30 microns wide with 140 inches of EFL you understand the need for exact tracking.

References:

- (1) Matthews, L. D.; Libert, Y.; Gérard, E.; Le Bertre, T.; Johnson, M. C.; Dame, T. M. (February 2011). "H I Observations of the Asymptotic Giant Branch Star X Herculis: Discovery of an Extended Circumstellar Wake Superposed on a Compact High-velocity Cloud". *The Astronomical Journal* 141, (2): 60
- (2) Lebzelter, T.; Kiss, L.L. (2001). "Monitoring of LPVs with an Automatic Telescope. II: A comparison of APT data and visual observation", *Astronomy & Astrophysics* 380, 388-396
- (3) LL.Kiss, et al, (1999). "Multiperodicity in semiregular variables", *Astronomy & Astrophysics* 346, 542-555



Figure 4



Observation Reports

31 July

The Sun. Six groups. Line of 4 N. hemisphere groups across photosphere. Near centre is Waldmeier "C", but next group to W. is probably "F" but with no or de minimis penumbral development. Fading or not developed yet? Near east limb could be an Old Cycle (24) Waldmeier "B", but polarity analysis necessary. Very near equator.

Transparency poor, seeing fair.

Instrumentation as before.

.....
COMMENTARY: Observer unaware if O. S. can produce systems this late.

2 August.

The Sun. 6 groups in roughly spaced array, 5 north hemis. Near W. limb is previously reported Waldmeier "F", but with less penumbral development expected from M. Waldmeier's taxonomy. Three of the groups are of the de minimis "J" class incl the most prominent spot today near centre. Just to east of said major spot is classic "C" group. Nearly on E. limb is seemingly lone spot. Possibly observed as depression in photosphere.

Transparency fair, seeing good.

Instrumentation as before.

2 - 3 August

The Moon. Approx. 1.5 d. past full. Checked for the "SHINING MTS" near Grimaldi, but OBS. HAND. cites unfavourable libration in first days of Aug. No trace. PETAVIUS: Usual striking sight of Rima Petavius's radial traverse to central peaks, but unknown to Observer, a much lesser rima ~ 120 deg. away. (Plate 53-1, ATLAS [...] NEAR SIDE OF THE MOON [N.A.S.A. 1971] Lunar Orb.) Doubt visible except under very favourable libration with the instant telescope. Some question at eye-piece of how many elements to the central "peak" of Petavius, 3 or 4?, but Kopal's Plate 62 (NEW PHOTOGRAPHIC ATLAS [1971]) clearly shows four peaks. LANGRENUS: Central "peak" seemed to have two sub-peaks a/k/a/ "saddle-back, but unsure. Kopal 62 and N.A.S.A. Plate 46-3 confirm two = Alpha/ Beta. MOUNTAIN NEAR S. POLE: Rühl LUNAR ATLAS notes "terrain is mountainous and the foreshortening . . . very difficult". Rühl shows mountain beyond Scott (see Plates 72 and 74), on or over limb. N.A.S.A. book more helpful with Plate 94-1, especially for Scott area but showing adjacent Amundsen. Of many pictures of the south pole Pl. 94 and 106-1 give best indication of a mountain very close to the pole S. of Amundsen. Further investigation requires reasonable duplication of the N-S libration that morning, with southern limb tilted AWAY from Earth.

Transparency fair + clouds. Seeing initially good.

16" f /10 Borr II @ 130X

.....
COMMENTARY: Observer did not have map for far S. latitudes at 'scope, not good practice.

8 August

The Sun. Five groups, all but one de minimis. Exception had well developed umbra + two very small companion pores.

Transparency fair.

Instrumentation as before.

3-4 August

The Moon. Well in to gibbous. **Cleomedes** just ahead of terminator, would be regarded prominent feature if not just on N. side of Sea of Crisis. Three features on floor: in north-south line craterlet "B" and a "hog-back" mtn. "a". 3rd feature difficult, given seeing. From investigation = flat floored craterlet "j". Rima Cleomedes either not vis. (?) or not well illuminated, even with very low solar angle. See Plate 54-3 *Atlas and Gazetteer*, supra. Rima shown forked on Rühl's Plate 26, prob. very subtle since not on Atlas's photographs from space. **Copernicus.** Very high solar angle, no shadows. Floor brilliant with three enhanced points equi-spaced in rough line. Alter's Pl. 93 gives good rendition (but with shadows). Observer's impression is middle mountain more prominent than Alter or Kopal's Plate 111. Higher albedo than two flanking mts? even brighter surrounding floor? **Aristarchus.** featureless crater from intrinsic brilliance and ~ noon at that longitude. Resembled routine over-exposed image in atlases. **S. pole mountain.** Visible again.

COMMENTARY: From prev. morning. **Langrenus** and **Petavius.** were both very promin. just before terminator, as with Alter Plate 45. Apparently cousins even if Lang. slightly smaller. (132 km. to 177 km.) Same substrate? .Approx. same genesis? Like morphological similarity in biology, not same taxon. L. = "Ec" Eratosthenian crater. P. = "Ic" Imbrian crater. (Unified Geological Map, N.A.S.A./ U.S. Geol. Survey)

Jupiter. South Aequatorial Belt back to form: wider than but less intense than N. Belt.

Transparency poor from moon-light and turbidity. Seeing good.

Instrumentation as before @ 250X.

10 August

The Sun. Very little in photosphere given advance of Activity Cycle 25. Two groups: Waldmeier "H" dominant and (developing/ under-developed?) "F". No or very little penumbral structure, but typical plethora of small spots.

Transparency good.

Instrumentation as before.

12 - 13 August

Perseid Meteor Shower. Very poor display after ~ 04.15 U.T. Only one object of serious note, certainly a shower meteor.

Transparency good.

Naked eye observing.

COMMENTARY: The impression for over twenty-five years is the Perseids are systemically fading. No study made of archives of the North America Meteor Network. Excellent chapter in G. Kronk, Meteor Showers (1988) going back to 1st c. C.E. indicating an uneven performance even in to 1980's.

15 August

The Sun. Now covered with groups in both hemispheres. 6 or possibly 7 only determined by polarity. Difficult to define border between two (assuming it exists). Disc centre "dominated" by two: Waldmeier "C" and "E". The rest deminimis, save what could be very extensive E-W group on E. limb. Total # of spots on disc could be forty.

Transparency good, seeing excellent.

Instrumentation as before.

18 August

The Sun. Six groups, two (Waldmeier "C" and "E") and the dominant spot in an other, are arrayed in huge equilateral triangle ~ disc centre. As suspected in prev. rept. a very extensive "linear" group with few members has moved in. No reasonable estimate of # of degrees longitude. A lone spot is emerging from E. limb. One leaving "group" is a lone Waldmeier "A".

Transparency good, seeing good.

Instrumentation as before.

.....
"Handsome Joe" McBride sent small scale picture of Sun in H-alpha. Long latitude filament -- prominence -- at centre, and one of equal length in longitude, far southern hemisphere.

19 August- an email...

From: Joe McBride

To: Gary Ross

Date: Saturday, August 19, 2023 22:34

Subject: Watching the moon tonight low in the west

I followed the moon tonight, roughly at 8:34 till 9:56 when it was behind the trees of the house across the street. I got out my dad's 7x35 binoculars and my mighty 11 x 80 binoculars. The moon appear to be 3 .5 days old but in this evening's clear skies, the earth shine was not very apparent as it is when the moon is better placed for such observations in the spring, or now in the morning. Mare Crisium in the Russian portion of the moon was seen well in the 11 x 80's along with several craters, and some rough patches to the south. Bryan & Makenna each got a look see....kids are astro jaded.

19 - 20 August

Jupiter. Sigma Ari far in to realm of the satellites. All thought dimmer (5.5) than Ganymede (4.7), not easy to tell which is which except Jupiter entries in Obs. Hand. Star white-blue but atmosphere & proximity to ball confuses eye. Callisto far to E. but coming back from elongation. Closest approach in ~ six hrs. from writing.

Variable stars. Against odds, VY Tauri and CZ Orionis (very low). Vy = "M" class, complex spectrum in low 13s but in reach given altitude. CZ in outburst! U-Gem eruptive. Observer's obs'n possibly first this apparition.

Transparency fair + twilight

8-in. Newtonian & 16-in. Schmidt-Cass. @ Veen Obs.

22 August

The Sun. 4 groups. The longitude long Waldmeier "C" dominates disc centre, showing no sign of additions or subtractions (more than de minimis). At east limb, a large spot with umbra, greatly fore-shortened, probably "C" or "H", depending on what follows out.

Transparency poor, stratus.

Instrumentation as before.

26 August

The Sun. Five groups in both hemispheres, including 2 a high latitude, i.e. New Cycle. 3 spots de minimis Waldmeier "A" and two probably "C" near centre disc

Transparency fair (cloud, seeing fair).

Instrumentation as before.

27-28 August

Variable stars, Eridanus and Orion. First observation (negative) of V344 Ori this season. Never have seen this U Gem in eruption or at all. CZ is gone back to "resting" state. Invis. All though the U Gem AH Eri very low, credible obs'n but invis. Some thing wrong with chart for AY Eri. Shows top of range in "10s" but never obs'd that dim through years. Presently 8.7.

Transparency good. Seeing good for elevations.

16" f /10 "Mighty Borr", var. mags.

28-29 August

AR Eridani and Jupiter. Former poorly observed, low. 12.0. The Giant Planet ditto, but very high near meridian. Little seen except renewed disparity between Aequatorial Belts, the S. washed out, and a faint bluish polar "hood" in N. The "false" Ganymede now to east of planet but in realm of satellites. Very bright @ 5.5, but impos. to distinguish betw. star and satellites by inspection.

Transparency poor + twilight. Seeing poor.

Instrumentation as before, 255X

.....
COMMENTARY: Even observations of dubious quality are of use for stars emerging in the east, ahead of or during twilight. There may be very few observers

30 August

The Sun. Four groups all S. hemisphere. An "A", nearly difficult to discern. A "C" near east limb. An "H" with the bevy of pores. Possibly 5 groups given relationship of a very small spot to leading group with developed umbra.

Transparency excellent, seeing fair.

Instrumentation as before

.....
COMMENTARY: These taxa from M. Waldmeier, Federal Observatory, Switzerland.

I. A. U. Quarterly Bulletin No. 77.

30 - 31 August

Variable stars in Ori & Eri. All eruptive stars, 2 in Ori, 1 in Eri. All Well below reach of telescope. Difficult.

Transparency poor, twilight/ Full Moon.

Instrumentation as before, various mags.

31 August

The Sun. 4 groups with action heavily biased to W. half of photosphere. Barely vis. Waldmeier "A" at centre, and a "B" in southern hemis. Especial interest: two "H" groups, north and south at approx. same longitude.

Transparency excellent, seeing good.

Instrumentation as before.

.....
COMMENTARY: Are the prominent "H"s linked by sub-surface mechanism? Different polarities?

NO, TOTO, WE'RE NOT AT STARGATE ANY MORE.

"The night of [our] nights" -- from Kismet. Never seen the like of it, not even the Mars nights of '01 and '03.

I was in bed in 2nd storey of Kissing Rock Farm, catching well-deserved "winks" before going to the Veen Observatory for grave-yard shift. There were lights playing on walls from all directions. Could it be the Last Days the ultra-Christians constantly entertain us with? No such luck: auto traffic stopped at the intersection of 36th and Kissing Rock Road. The Perseid shower received top billing over Last Judgment.

It was my intention to drive part-way, park the motor at neighbours', then "hoof it" up the hill. How naive! I arrived at the intersection, nearly got locked in a tri-directional traffic jam, so backed home in the wrong lane, and went on foot through the stopped & creeping traffic. At the Veen Observatory the tableau was of a mob scene. The Grand Rapids Association, using the Museum web-site and helpful news broadcasters, had created pandemonium. Later reported: eleven hundred attendees, nota bene paying people. Warren Society has revolutionally consciousness, but out here money is our god.

The mood was Woodstock. No pushing and shouting. No simmering riot. A din of chatter and laughing. On the other side of the car park was an array of portable chairs, blankets, and sleeping bags. On the moonless night one reasonably used a light walking amongst them.

The sky was magnificent for the Veen site, the best in a month in a year troubled by fugitive smoke. My post was an eight-inch house Newtonian by the front door. Interest was minimal, because the visitors were at a real observatory, so wanted the Big Time. I met two fellows recently from India, who travelled from Rochester Hills -- and stayed all night. They will attend the next Veen public event, so they say, hard lads. I told them of the Astronomical Society and Stargate, but they knew nada.

About the Perseids, oh, them . . .

G. M. ROSS,
Greatest Observer in Michigan and friend to Man

The Perseids at Stargate Saturday August 12

Here are some photos I took at the Perseids Meter Shower at Stargate using my iPhone 14

These are hand held shots using the phones built-in image stabilization and are about 10 seconds long.

Notice the Big Dipper to the upper right of the observatory.

Light pollution was atrocious.

The outhouse has an Extremely Bright Spot Light that can probably be seen for several miles.



Is this necessary?

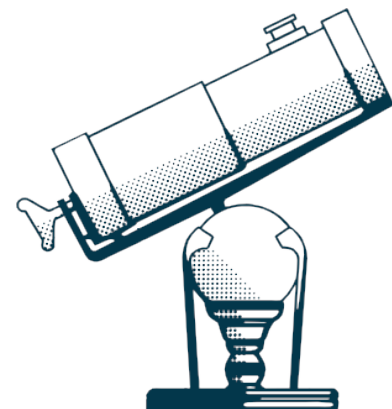


Another Spot Light near the entrance is nearly as bright.

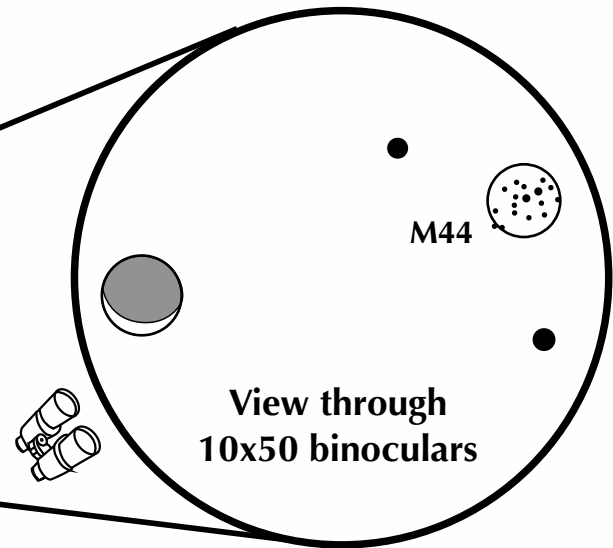
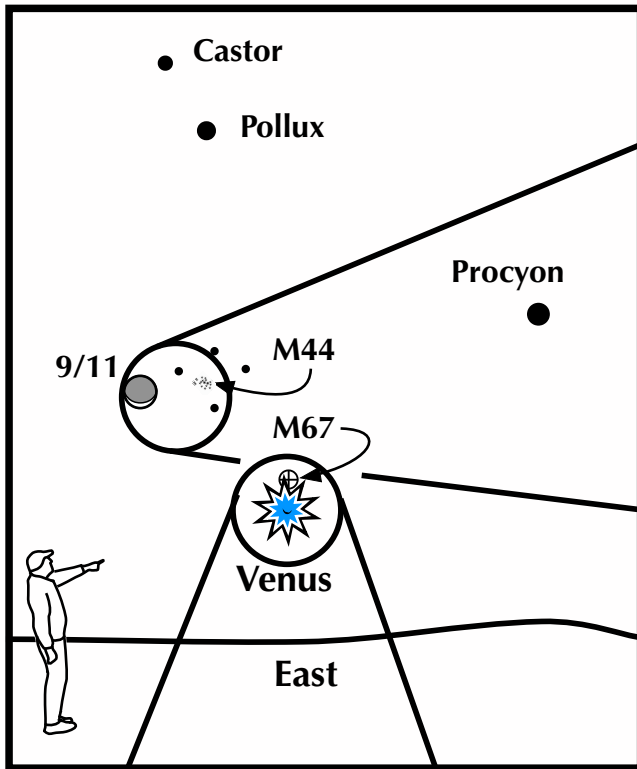
Pity, as the night sky on this night was exceptionally clear.

Mike O'Dowd

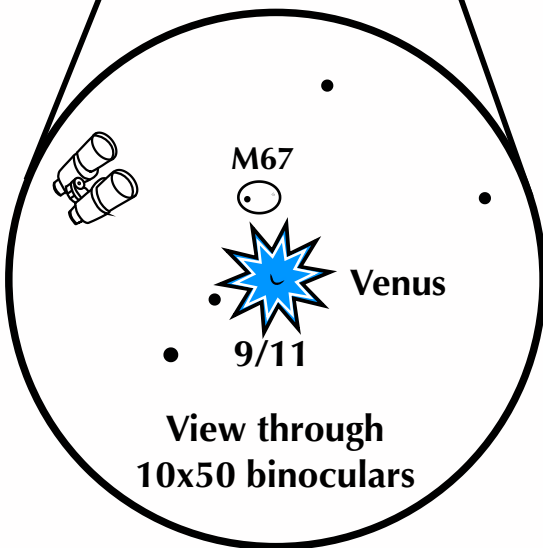
Photo credits: Mike O'Dowd



If you can see only one celestial event in the morning this September, see this one.



Moon visits M44, Venus visits M67

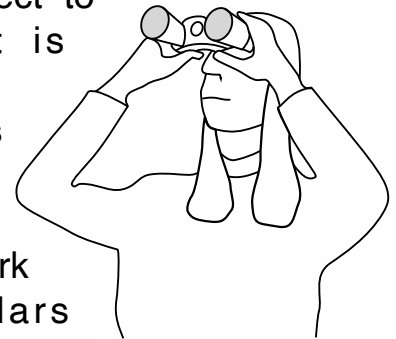


On the morning of Sep 11, look to the east 90 minutes before sunrise.

- The crescent moon, full with earthshine, glows left of M44, the Beehive cluster.
- M44 can easily be seen in binoculars.
- The dazzling object to their lower right is Venus.

• Just above Venus lies another star cluster, M67. If viewed from a dark location, binoculars should reveal its fuzzy presence.

• If the binoculars are securely mounted, the tiny crescent of Venus should be barely discerned amid the planet's glare.





Astronomy at the Beach

Michigan's largest FREE astronomy event!
MI license plate "recreation passport" required (or get one at gate for \$17)



Look through BIG telescopes



Space images display, interactive science demonstrations,
vendors, local clubs



For schedule and details go to our Facebook page or glaac.org



Kent Lake Beach, Island Lake State Recreation Area, Brighton

September 22 & 23, 2023 4pm-midnight



For Sale

iOptron Sky Guider Pro complete kit with all accessories except camera tripod not included. Like new condition.

Purchased in 2018. Great tracker for use with DSLR or astro camera for astro photography. NOT FOR VISUAL USE. Very good tracking when used with 135mm camera lens and below for wide field imaging. You can also use with a small telescope and camera. Has excellent internal polar alignment scope, All you need is a camera tripod. Ideal light and compact solution for remote imaging. It also has auto guide port although it tracks so well that is not needed. See the link below for specs. If you are thinking of trying astro photography this is a great way to get started and economical.

I have moved away from this type of imaging.

Asking \$300...includes free sturdy case.

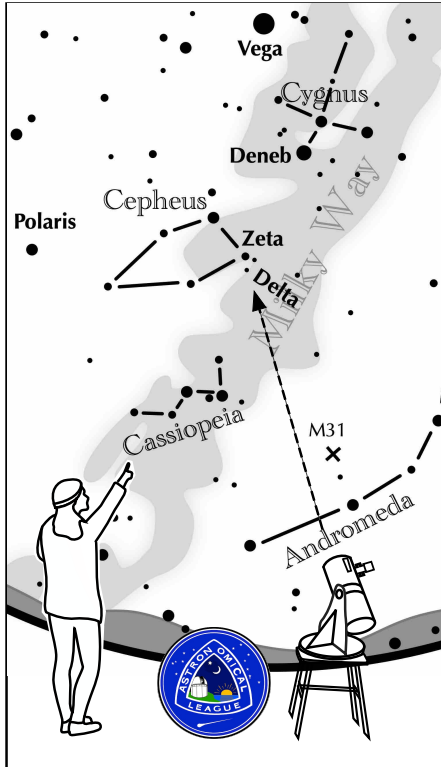
Bob Berta

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BIKER123@ATT.NET



ASTRONOMICAL LEAGUE Double Star Activity



Other Suns: Delta Cephei

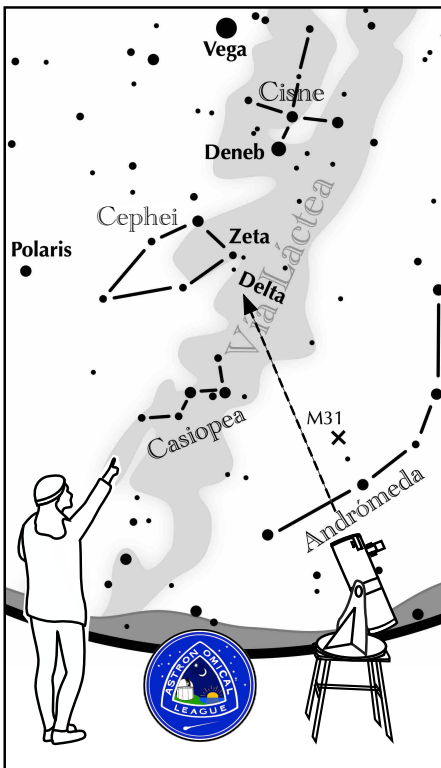
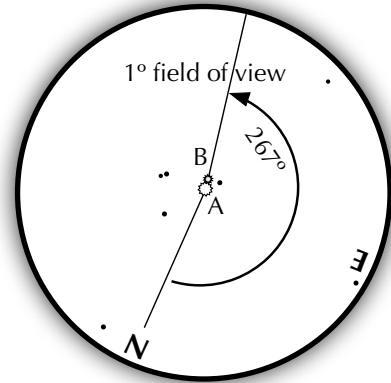
How to find Delta Cephei on a September evening

Face northeast and find bright Deneb, the northernmost star of Cygnus. It is nearly overhead. Between Deneb and the "W" shaped Cassiopeia lies the house-shaped constellation Cepheus. Find Zeta, the lower left star of the "house." Dimmer Delta shines just below it.

Suggested magnification: >20x
Suggested aperture: >2 inches

Beta Capricorni

A-B separation: 41 sec
A magnitude: 4.2
B magnitude: 6.1
Position Angle: 191°
A & B colors:
yellow, blue



Otros Soles: Delta Cephei

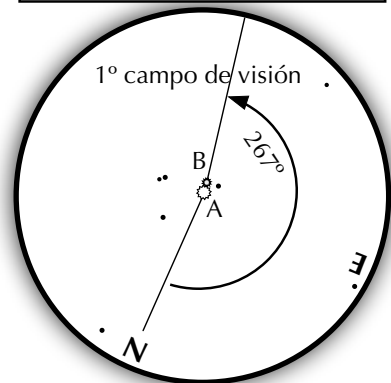
Cómo encontrar Delta Cephei en una tarde de Septiembre

Mire hacia el noreste y encuentre a la brillante Deneb, la estrella más al norte de Cisne. Está casi arriba. Entre Deneb y Casiopea en forma de "W" se encuentra la constelación de Cefeo en forma de casa. Encuentra a Zeta, la estrella inferior izquierda de la "casa". La Delta con brillo debil, esta justo debajo de ella.

Ampliación sugerida: >20x,
Apertura sugerida: >50 mm

Delta Cephei

A-B separación: 41 sec
A magnitud: 4.2
B magnitud: 6.1
PA: 191°
A & B color:
amarilla, azul





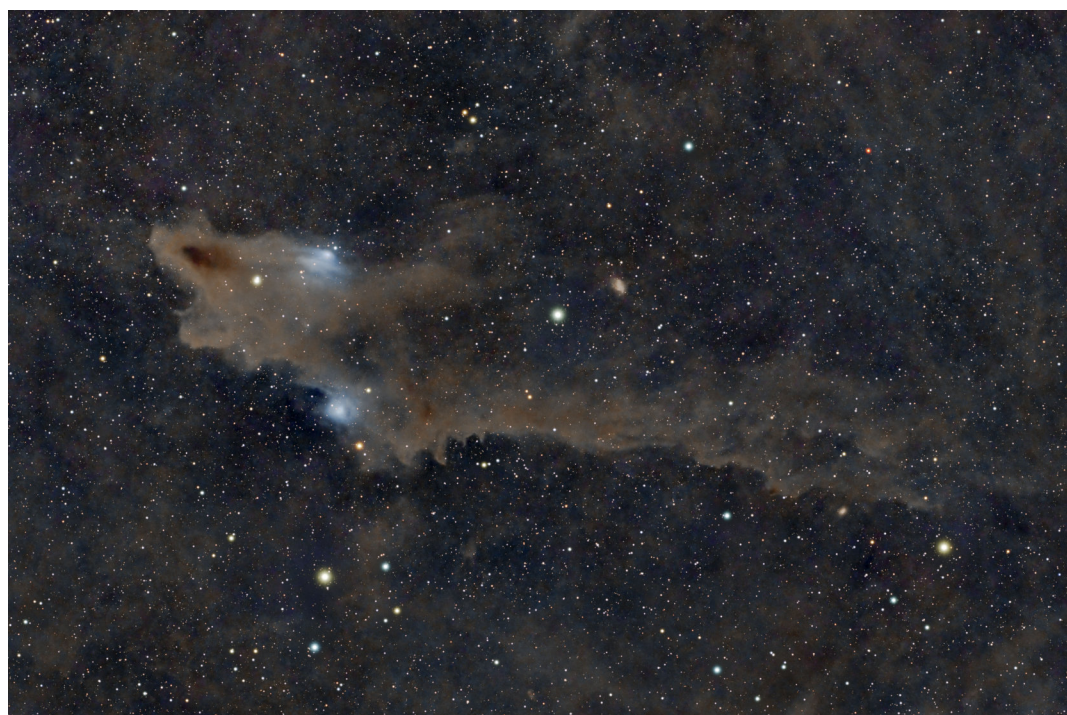
WAS Astrophotos



Above: VdB 152 / Barnard 175 / LDN 1217 nebulae in Cepheus

Below: LDN 1235 - Dark Shark Nebula in Cepheus

Images by Dale Hollenbaugh



The View From C.W. Sirius Observatory

Messier 82

Messier 82 (also known as NGC 3034, Cigar Galaxy or M82) is a starburst galaxy approximately 12 million light-years away in the constellation Ursa Major. A member of the M81 Group, it is about five times more luminous than the whole Milky Way and has a center one hundred times more luminous than our galaxy's center. The starburst activity is thought to have been triggered by interaction with neighboring galaxy M81. As the closest starburst galaxy to Earth, M82 is the prototypical example of this galaxy type. M82 was first discovered by Johann Elert Bode on December 31, 1774 together with M81; he described it as a "nebulous patch", about 0.75 deg away from M81, "very pale and of elongated shape". In 1779, Pierre Méchain independently rediscovered both galaxies and reported them to Charles Messier, who added them to his catalog. In 2005, the Hubble Space Telescope revealed 197 young massive clusters in the starburst core. The average mass of these clusters is around 200,000 solar masses, making the starburst core a very energetic and high-density environment. Throughout the galaxy's center, young stars are being born 10 times faster than they are inside the entire Milky Way Galaxy, causing the reddish plumes of hydrogen blasting out from its central region. M82 can be viewed using a small telescope in relatively dark skies. But using a 10" or larger telescope can reveal the nice vertical dark lane that runs through the center.

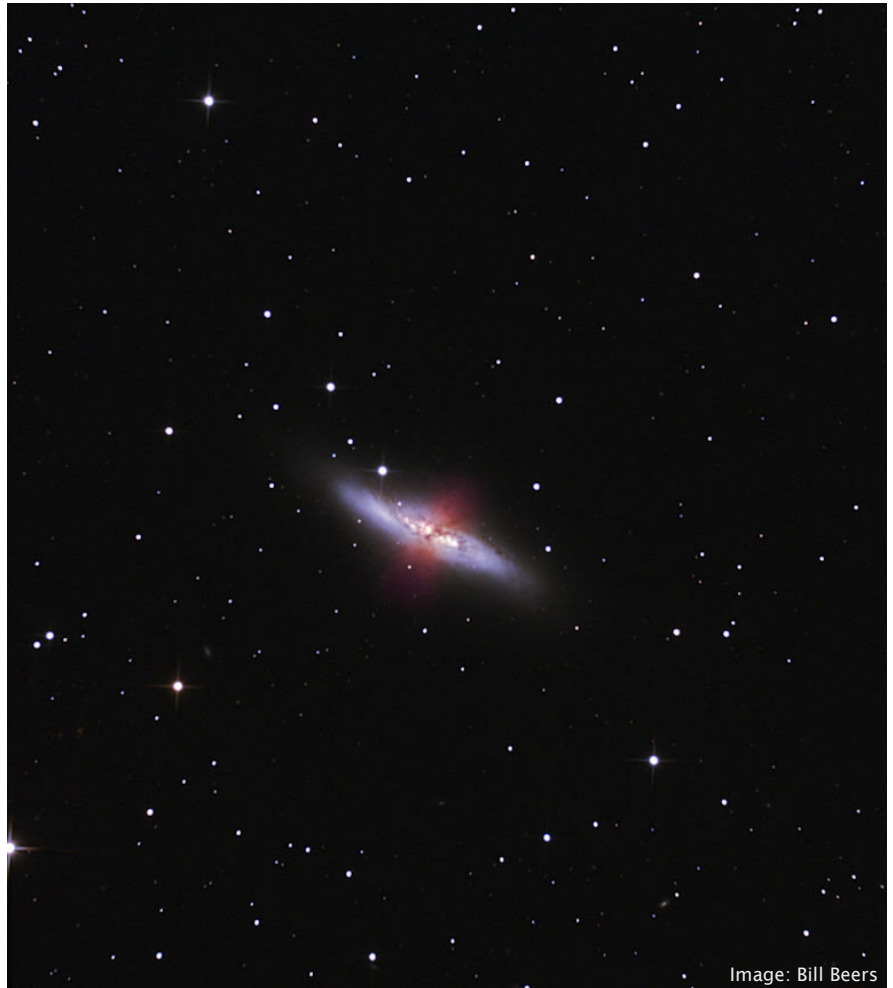


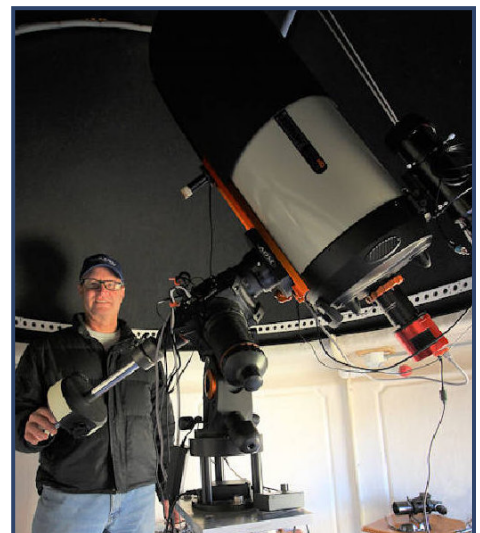
Image: Bill Beers



About CW Sirius Observatory

C.W. (Cadillac West) Sirius Observatory is located 15 west of Cadillac Michigan. Owned and operated by WAS member Bill Beers. The dome is an 8' Clear Skies Inc dome which houses an 11" f/10 SCT telescope, a 102mm f/7 refractor telescope, Celestron CGEM DX mount, and uses an ASI ZWO 071 color CMOS camera, as well as a QHY8L color CCD camera. The telescope can be remotely operated from inside Bill's house.

Anyone interested in learning about astrophotography, or any questions regarding equipment, or how to take astrophotos using your iPhones, or any related questions, can contact Bill at: BEEZOL-L@AOL.COM



Presentations

Cranbrook

September 11, 2023 -7:00PM

Main Talk

Searching for the Dark Universe

By Jim Shedlowsky

In the early 20th century our understanding of the nature of the Universe was revolutionized, the “Big Bang” theory was born, and Cosmology became a major branch of the science of Astronomy. In recent years, our knowledge of the Universe, its age, composition, and structure has been substantially revised through observation and questions raised. This presentation is intended to review and give a historical context of these recent developments, but also to describe the current state of the Standard Model of Cosmology and the turmoil that now exists within it.

About the Speaker

Jim Shedlowsky, long time member and former treasurer of the Warren Astronomical Society (WAS), and rockabilly legend, graduated from the University of Michigan in 1960 with a degree in Engineering Physics, and worked for 36 years as a Vehicle Development Engineer/Manager. In his spare time, he wrote and recorded music for Epic and Roulette Records, as one of the “Skee Brothers” (they were on Dick Clark’s “Bandstand” in 1958.)



Jim’s astronomical interests include observation and outreach (he owns several telescopes), but in recent years his passion for astronomical history and technology has become a major factor. He is a member of the McMath-Hulbert Astronomical Society, and has visited a number of major observatories. He and his wife winter in Mesa, Arizona (a great place for observing), and he participates in activities of the East Valley Astronomy Club.

Short talk

Fixing the Calendar

(once and for all)

By Jeff Macleod

The Gregorian calendar is great, and a vast improvement on the Julian, but could it be better? Jeff Macleod will propose the Warren Calendar, an unlikely but theoretically possible solution.

About the Speaker

Jeff MacLeod is a former WAS president, current observatory chair, and a regular at outreach events as well



as behind the podium. During his time at Wayne State, he was a presenter in their Planetarium while getting a bachelor’s in physics and another in astronomy. Jeff recently started work in the aerospace sector simulating missiles (the rest is classified). Nowadays most of his free time is spent working on his space-flight simulator, a life size recreation of a Gemini spacecraft you can actually fly in.

Macomb

September 21, 2023 - 7:00PM

Feature

Empowering Discovery

Unveiling the Universe Through Citizen Science

By Francette Fey

In recent years, the field of astronomy has undergone a transformative shift with the integration of Citizen Science—an inclusive and collaborative approach that enlists the passion and curiosity of amateur astronomers to contribute meaningfully to scientific research. This talk will explore the burgeoning realm of Citizen Science in astronomy, shedding light on its significance, methodologies, and the remarkable discoveries it has enabled.

The presentation will delve into the fundamental concept of Citizen Science, highlighting how it capitalizes on the collective power of diverse individuals, regardless of their formal scientific training, to engage in real research projects. By breaking down traditional barriers between professional researchers and the general public, Citizen Science offers a unique platform for enthusiasts to actively participate in data collection, analysis, and interpretation.

About the Speaker

Francette Fey is a Professor of Physics, Physical Science, Astronomy, and Environmental Science at Macomb Community College.

WAS PRESENTATIONS

If you would like to present either a short talk (10-15 minutes) or a full-length talk (45-60 minutes) at a future meeting, please email Dale Partin at:

firstvp@warrenastro.org.



Meteors scratch the sky

Despite what you read online, it is possible to think of meteor watching as one of the most boring things you can do with the night sky. No cosmic connection, no postulating about the origins of the Universe, no understanding of what dark matter might entail. When we look for meteors, we are in our own celestial backyard. We usually do not even use a telescope or binoculars; it's just sitting on a comfortable lawn chair and looking up at the sky. Even if we spot a shooting star as bright as the brightest of stars, it is only a large speck of dust that is probably only a few dozen miles above our lawn chair.

So why bother with watching meteors at all? Actually, it is because they are so close, so local, that makes this activity unique. A meteor may be a large speck of cosmic dust, but it strikes the Earth's upper atmosphere at a velocity of 40 miles per second. And that is precisely what I saw, 44 times, on the beautiful night of August 12, 2023.

That night began with the usual thickness of clouds, typical of the Arizona summer monsoon. But the clouds rapidly dissipated. Instead of clouds, stars began to appear. Well before midnight, I was out with Eureka, my 12-inch diameter telescope with which I would complete 2 hours of comet hunting before the night ended. One hour before midnight, another before dawn. In between, I counted my 44 meteors, one of which is in the accompanying picture.

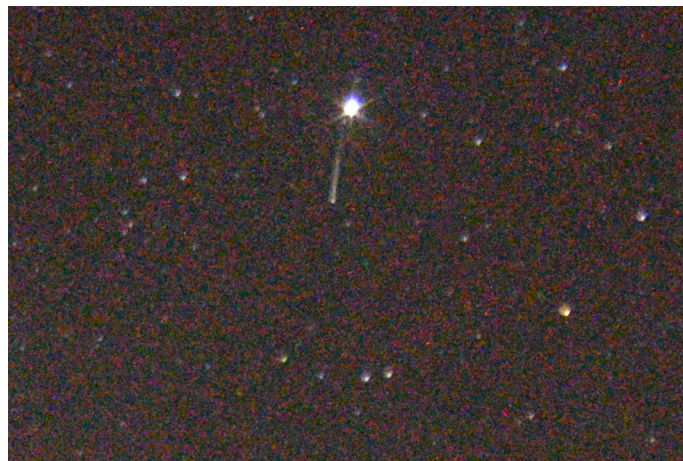
The Perseids of 2023 was a very good meteor shower, but not the best. In November of 2001, Wendee and I were in the Australian outback during the peak of that year's Leonid meteor shower. We gathered on the shore of a dry lake bed and watched carefully as Leo the lion reared its handsome head above the eastern horizon. Then silently and swiftly, a bright shooting star appeared in the east, made its way across the sky, then slowly vanished in the west. One watcher said it all: "This trip was worth it!" A few minutes later, a second meteor did almost the same thing. After that the meteors came thicker and more often until, at around three in the morning, they suddenly began pouring out the sky at the rate of about one meteor per second. One observer even saw a meteor after the Sun rose.

What caused this burst of shooting stars? It appears that they originate from a comet. In December 1865 and January 1866, that comet was discovered by the German Wilhelm Tempel and Horace Tuttle of the United States. Because its orbit was identical to the orbits of the meteors, it was subsequently identified as the "parent comet" of the Leonid meteor stream. Moreover, because the comet passes close to Earth every 33 years, it was connected to the great meteor "storms" of 1833 and 1866.

In a similar way, Comet Swift-Tuttle, discovered in 1862 by the Americans Louis Swift and Horace Tuttle, was determined to be the parent comet of the Perseid meteors. As I watched them that unforgettable night, I was struck by the awe these tiny specks can generate as they race through our atmosphere. I was struck also by the wonder they generated in my mind: these always welcome visitors from space invariably enchant my soul.

A final note: One night in 1833, when Abraham Lincoln was a young lawyer, a deacon friend pounded on his door and woke him. "Arise, Abraham," he yelled. "The day of judgment has come." Lincoln leapt out of bed and strode to a window, and he saw countless shooting stars." Shortly after he became president, when several states left the union, Lincoln told this meteor story to some visitors. As he watched the falling stars in wonder, he also saw that the familiar constellations were still there in the sky. "The world did not come to an end then," he said wisely. "Nor will the Union now."

A fellow citizen who lived at the same time as Lincoln, and who likely admired and respected him, was Carl Schurz, who would be elected to the U.S. Senate a decade later. On April 18, 1859, on the eve of the American Civil War, he gave a lecture in Boston's Faneuil Hall. He said: "Ideals are like stars; you will not succeed in touching them with your hands. But like the seafaring man on the desert of waters, you choose them as your guides, and following them, you will reach your destiny."



A bright meteor appears near Jupiter in the sky, just before dawn.



Starlink Generation 2

From Brad Young, Astronomy Club of Tulsa

Effect of Upgrades to Starlink Generation 2 Satellites on Visual Brightness

By Brad Young and Jay Respler

Introduction

The rise of large constellations of small communication satellites in low-Earth orbit (LEO) over the last four years has, with it, led to concerns about the effect on space situational awareness, ground-based visual and radio astronomy and the effect on the health and well-being of the natural world, including humans. Several studies have published the measurable effects of these concerns, and several more studies are ongoing. The issue has brought efforts, including new laws, to retool the licensing process for LEO in a new era of hundreds of thousands of small satellites instead of hundreds of large objects.

Specifically, the authors have concentrated their efforts on observing, reporting, and publishing data on the prototype Blue Walker 3 from AST Space Mobile, and the still-growing OneWeb and StarLink constellations. The aim of this article is to present new observations of the initial Gen 2 Starlink satellites and discuss how their brightness is likely to contribute to the ongoing impact on optical astronomical observations.

On 2023 Feb 27, the first of the Gen 2 Starlink satellites was launched into orbit. This initial slate of 22 satellites were not the "final" version of the Gen 2 design, but a modified Gen 1 payload that was an interim step in design, referred to as Gen 1.5. Visual observations conducted after the group reached operational orbit suggested that these satellites would be particularly bright, as expected with a larger object compared to the Gen 1 design. They also had a blue color not seen previously, due to a new material selected by SpaceX specifically for reduction of optical brightness.

Background

Operators of these megaconstellations have begun to launch their satellites ranging from prototypes to second generation designs. Understanding the effects on all stakeholders requires two steps: measuring the evolving threats and monitoring the engineering mitigation for effectiveness. SpaceX has the largest number of satellites in orbit currently and is the earliest major entrant. Early reports on the deleterious effects of their satellites on astronomy led to engineering changes in orbital parameters and design to reduce their reflectivity. With Gen 1, the original, smaller Starlink satellites, changes included orbital height adjustment, a visor (VisorSat) and special coating (DarkSat). This study looks at the reduction in optical brightness reached in the upgrade to Gen 2, where significant design changes were made to accommodate a larger object. A summary of the changes incorporated by SpaceX may be found here.

SpaceX is aware of the significant effect of solar phase angle on these long, flat satellites and instituted a policy of operating in a "shark fin" attitude that minimizes reflection of sunlight to Earth. However, this angle changes often throughout the orbit and must also adapt to any orbital changes. Many of the observed satellites that were suddenly bright on one pass were occasionally dim on a later pass with similar geometry, indicating the small room for error that this "knife's edge" mode allows.

Methods

All the data used for this analysis is visual magnitude, determined by using the methods below. The observations were performed by:

- Jay Respler, a dedicated satellite observer who has logged hundreds of brightness reports on Starlinks and OneWeb payloads since the first launches.
- Brad Young, who has reported on 90% of the Starlinks in orbit and has seen more than 9,000 unique objects in orbit visually, resulting in over 40,000 reports.

Visual observations were undertaken from 2023 Mar 16 to Jul 25 from sites near Tulsa OK, and Monroe NJ, USA. In most cases, hand-held binoculars were used. To perform visual observations, the following steps are performed. First, pass predictions are obtained for the observer's site. At a minimum, the location, expected time of observation, and the limiting magnitude an experienced observer can reliably see must be known, bearing in mind that moving objects may appear dimmer visually. Observable passes at low elevation, in deep twilight, or at unfavorable phase angles are discarded.

Next, suitable comparison stars are chosen to provide brightness measurements. The timing, location, and brightness of newly launched satellites often differ significantly from available pass predictions. Sufficiently bright comparison stars to enable magnitude estimation are selected for the appropriate stage of twilight, and alternate stars chosen in case the satellite pass was off track or early/late. All comparison star magnitudes are from the extended Hipparcos catalog.

Finally, the objects are observed as they pass the selected comparison stars, so a direct comparison can be made and immediately recorded. Any significant brightness variation (flashing or flaring) was also recorded at that time. Although brightness variations are not used for determining standard magnitudes, they may still provide useful space situational awareness information.

Discussion

Initially, as with Gen 1 launches, the objects were quite bright, easily seen naked eye at as bright as mag +1. After a period of a few weeks and with more observations, many of the objects from the first launch were found to be dim. Eventually, many of the Gen 1.5 and especially the Gen 2 satellites were dimmed to the point where they could not be seen by a visual observer using binoculars.

However, continued observation showed that the dimness was not always permanent. Occasionally a payload would become naked eye brightness again, and then return to dimness, or remain bright. Refer to Figures 1-4, that describe the observed corrected magnitude of the Starlinks Gen 1.5 and Gen 2.

The corrected magnitude is the apparent magnitude of the satellite, correcting the distance to 1000 km. Due to the complexity of modeling the shape of the Starlinks and unknown albedo and scattering behavior, a simpler model provides a way to compare differential brightness. No attempt is made to determine standard magnitude using phase angle; only range is considered. Therefore, this paper does not determine a standard magnitude for any of these satellites. Comparison to the target maximum brightness set by the IAU (International Astronomical Union) of magnitude 7.2 is based on the range corrected magnitude in this study. The light curve of the payloads in shark fin mode are nearly flat across most of the pass through the sky, so this approximation should be acceptable for the purpose here.

With this approach, some trends in the behavior of the new generation satellites are shown. Whatever transitory changes were made with Gen 1.5, many of that set did not perform as well as the “true” Gen 2 payloads. Two graphs show the typical outcomes so far for Gen 1.5. Note that not all the observed satellites are included in the data, only enough to show the trends but remain readable. Also, a few of the ranges are estimates due to the short life of elements with initial orbital raising and the inherent lag in dissemination of elements for these objects.

Gen 1.5 has several payloads as of July 30, 2023, that have not met the criteria of a range corrected magnitude of 7.2. The first graph shows examples of payloads successfully mitigated to the recommended parameter. The next graph shows examples of objects that, so far, have remained brighter than desired.

Gen 2 satellites have been more consistent in making the mag 7.2 mark; examples of these are shown in the third graph, and the last graph shows examples of the Gen 2 that did not meet it. The behavior of the satellites may indicate that the orbit modifications and positioning for Gen 1.5 were more elaborate than those needed to line out Gen 2. This may be indicative of an operator learning curve to maximize brightness reduction, or there may be reasons for this behavior that have little to do with brightness mitigation. It is an active situation – there are still many new Gen 2 groups that have had only a few observations. Those payloads are in the early stages of reaching final orbit and were not included here.

Further study is needed to determine what patterns emerge and what explanations may predict behavior. Monitoring by the astronomy community would be most efficiently accomplished by crowd sourcing the effort to amateurs. Although SpaceX has made great progress in reducing the brightness of a new, larger Starlink, we see already, through hundreds of observations, that there are still bright Gen 2 objects at final orbital height.

Path Forward

The International Astronomical Union recommendation is that the maintained brightness on-station of a satellite is not to exceed magnitude 7.2. Satellites such as Starlink Gen 2 could also present an additional source of noise for radio astronomy, since radio quiet zones, in which radio telescopes operate, do not automatically limit satellite emissions. This can be a particular issue for telescopes like the NRO at Green Bank which observe at or close to frequencies normally used by devices served by satellites. The planned

constellation of thousands of such satellites over the next decade may necessitate more research into effective strategies to protect upcoming ground-based telescopes and surveys such as the Extremely Large Telescope (ELT) or the Vera C. Rubin Observatory’s Legacy Survey of Space and Time (LSST).

Despite many efforts by the aerospace industry, policy makers, astronomers, and the community at large, the trend to make substantially larger, and brighter satellites seems to persist. Regulatory intervention could help ensure operators critically assess the impact of their satellites on the space environment before launch.

Communication with SpaceX confirmed that mitigation had included both design modifications to the satellites (the final Gen 2 set), and changes in attitude and other spatial adjustments after orbit was achieved. In a few cases, signal to the satellite had been lost, and this caused a delay in the mitigation, explaining the behavior seen from the ground. However, not all the behavior is explained by this alone; it may be a case where vigilance is required by the operator in maintaining the spacecraft attitude or other parameters.

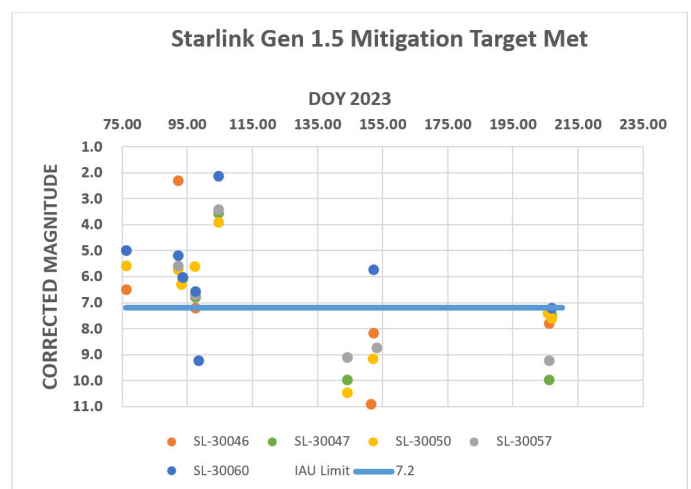
A proactive industry-led solution is investment in engineering solutions that allow payloads as large as the Gen 2 Starlinks to be operated without causing unmanageable issues with optical and radio astronomy. From the observations on the Starlink Gen 2 satellites, it appears that SpaceX has found ways to meet the IAU recommendations on optical brightness. Further study, as more of this portion of the constellation is launched, will help ensure the concerns of all stakeholders are met.

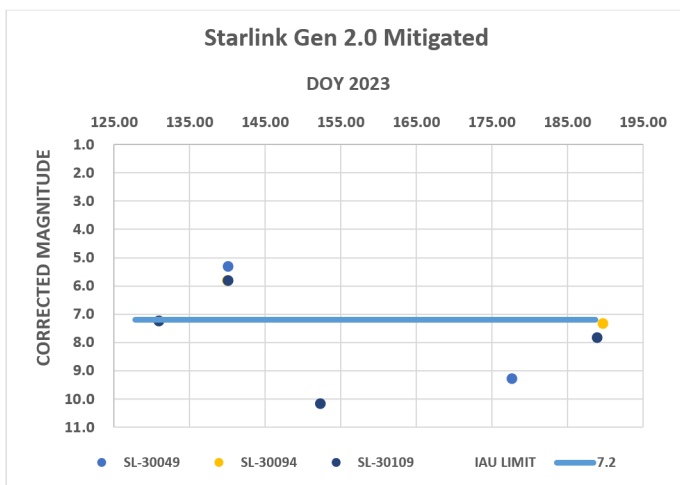
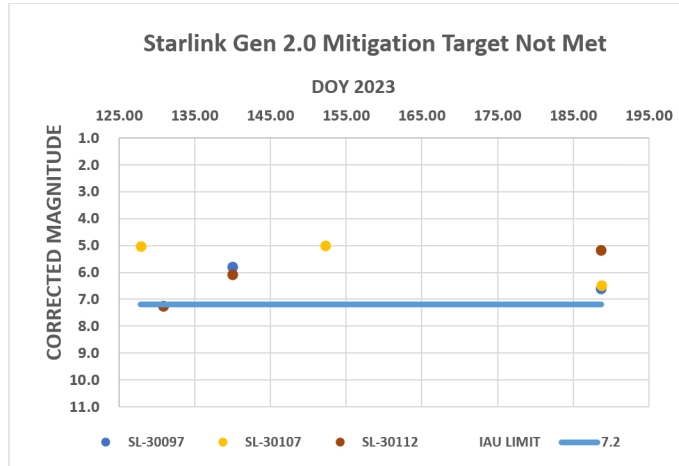
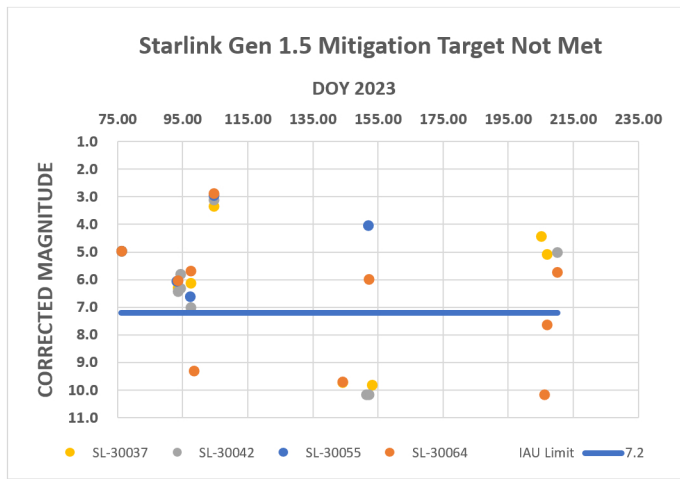
Acknowledgments

Brad Young [ORCID 0000-0001-6268-7790], is an affiliated member of the IAU Centre on the Protection of the Dark and Quiet Sky from Satellite Constellation Interference and would like to acknowledge their invaluable assistance in understanding the more technical aspects of the mitigation strategies employed by SpaceX.

Preliminary Observational Data

See body of paper for discussion.





References:

"Megaconstellation Satellites: Practical Ways Amateurs Can Help" Reflector, March 2022, p. 25

Dark and Quiet Skies Working Groups Reports II UN Office for Outer Space Affairs, edited by Connie Walker and Piero Benvenuti.

"Reclaiming Space: Progressive and Multicultural Visions of Space Exploration", edited by James S.J. Schwartz, Linda Billings, and Erika Nesvold.

"Second Generation Starlinks Satellites" monograph by SpaceX.

"Hubble Telescope Faces Threat From SpaceX and Other Companies' Satellites" New York Times, Mar 2, 2023, accessed Aug 1, 2023.

Observational data posted at [see-sat mailing list archives](#) and Brad Young's [website](#).

Join the Astronomical League



The mission of the Astronomical League is to promote the science of Astronomy. The major benefit of belonging to this organization is receiving the quarterly newsletter, The Reflector, which keeps you in touch with amateur activities all over the country.

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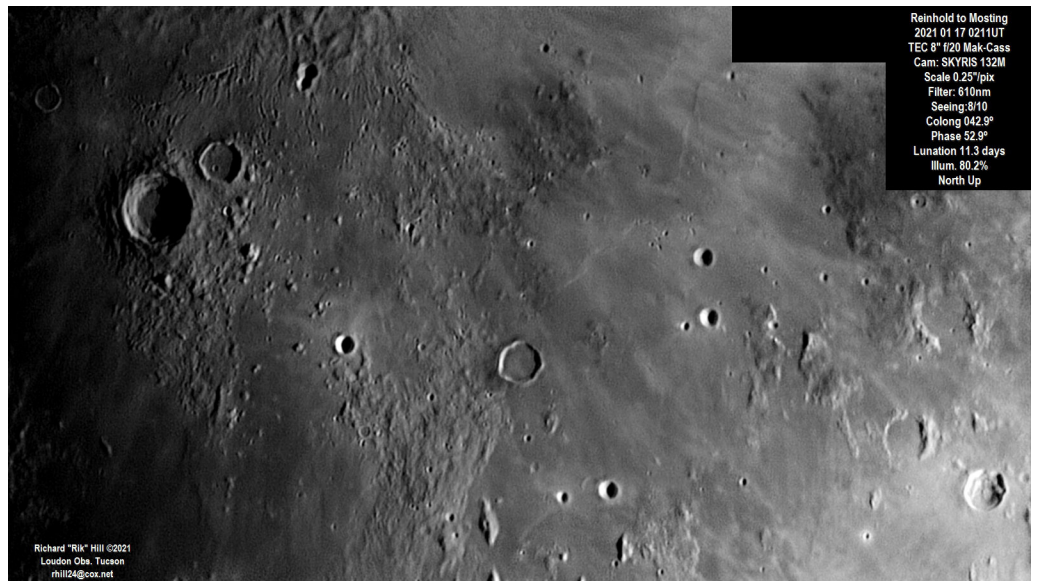
Over the Moon



with Rik Hill

Gambart

This overlooked region is south-east of the great crater Copernicus. On the left side of the image is the beautifully terraced crater Reinhold (diam. 49km). Just above and right of Reinhold is the ring crater Reinhold (24km) and further on the smaller twin craters Fauth (12km) and below it Fauth A (8km). Normally I wouldn't bother with craters of this size but these two figured prominently in the foreground of the famous New York Times "Picture of the Century" on Nov.24, 1966. A restored copy of that Lunar Orbiter 2 image can be seen at: donalddedavis.com/2004%20new/COPERNho.gif. I looked these craters up right away in 1966 when I first saw the Orbiter image.

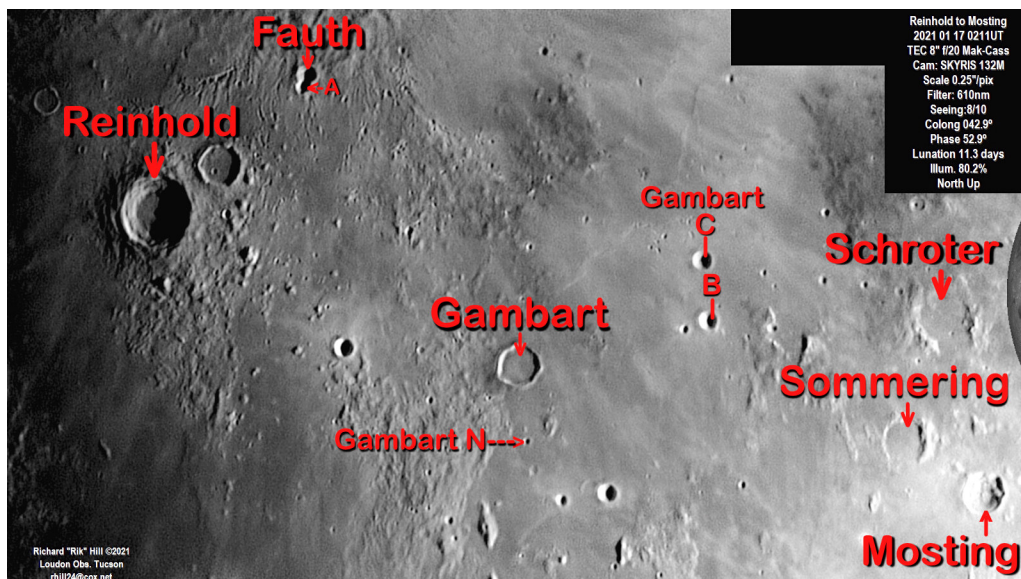


Dead center in this image is another very old ghost or ring crater Gambart (26km) of Pre-Imbrian age (3.85-4.55 billion years old) flooded with ejecta from the many large nearby impacts. Then on the right edge of this image is the crater Mosting (27km) with Sommering (29km) the ghost crater just to the left of it the same age as Gambart as the flooding might indicate. Above these two is the ruined crater Schroter (35km) Between and above a line between Sommering and Gambart and are two vertically aligned relatively recent craters of similar size. The upper is Gambart C (12km) and below it is Gambart B (11.5km). Between them and just to the left you can just make out 2 of the Domes Gambart, the left one sporting a nice central pit. Another dome can be seen south of Gambart itself by first spotting the small clear crater, Gambart N (5 km) well seen in this

image. Below and to the left is a slightly brighter portion of the mare and you may see the small pit there in the center of the bright region in its own dark patch. This is Gambart 1. Look and the curious mountain further south and left. It's has a crater in its summit but it is not volcanic. There are a number of such features on the Moon.

Before leaving this region, be sure to enjoy the hummocky terrain to the southeast of Reinhold. Then above Reinhold you can see a lot of the ejecta and secondary cratering from Copernicus. This is very interesting when on the terminator.

This is an image from a single 1800 frame AVI stacked with AVIStack2 (IDL) and further processed with GIMP and Irfan-View.



Location Maps by Ralph DeCew

History S.I.G.



September 1993

Front and center is a column "Journal Roundup" by Scott Jorgensen, a prominent feature of many of the WASP in the early 90s. But it never gained the frequency and longevity of "Computer Chatter" by Larry F. Kalinowski (our champion columnist).

To help beef up the content of our newsletter, we resorted to reprinting the feeds from the NASA Space Link: Mission Status Reports, July 1993 (Galileo, Magellan, Mars Observer, Topex/Poseidon, Ulysses, Voyager 1 and 2); Hubble Finds a Double Nucleus in the Andromeda Galaxy.

September 2003

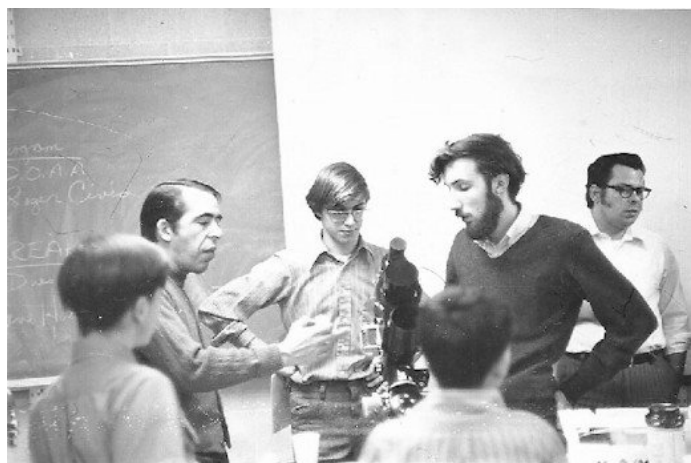
Fast forward to 2003 where we find that "Computer Chatter" has morphed into "Astro Chatter" by Larry Kalinowski, who also runs "The Swapshop". Along with general news and updates about the club business, we get this report: "A Starfest Experience" by James Wynn.

And, from NASA, "Careful Planning and Quick Improvisation Succeed in Space Biz" By Tony Phillip.

From the Scanning Room

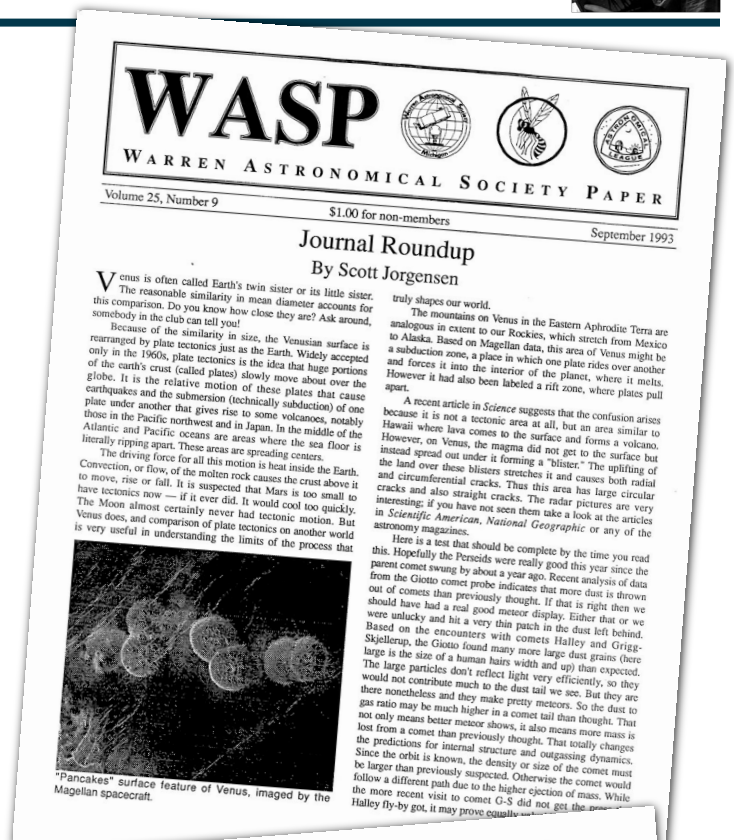
Not necessarily a scanning room report, although the new Canon all-in-one is working out better than the now mindless Epson. I wanted to point out the article on X Hercules is by one Gerald Persha, a member from back in the 70s, now residing in Arizona and has renewed his membership. Be sure to go back and read his article, has a bit of WAS history in there, too.

Dale Thieme,
Chief scanner



Blast from the past:

The gentlemen facing the camera in this photo have been identified as (L to R) Roger Civic (designer of our logo), Gary Morin, Gerald Persha, and Larry Kalinowski.



This chart shows the sky as it appears at approximately 10pm EDT near mid-month at northern mid-latitudes.

SEPTEMBER 2023

Notable Sky Happenings

Sep. 1 - 7

The bright "star" to the left of the Moon in the south before sunrise on the 4th is the planet Jupiter.

Sep. 8 - 14

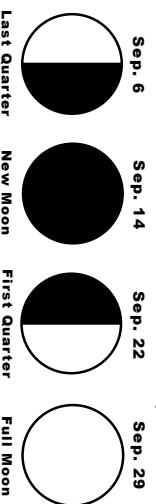
Moon is below Pollux and Castor is above on the 10th. The bright "star" farther below is Venus. On the 13th the Moon is to the left of Regulus (E predawn).

Sep. 15 - 21

The bright star to the left of the Moon on the 20th is Antares in Scorpius (SW evening).

Sep. 22 - 30

Mercury is at Greatest Elongation from the Sun on the 22nd (E morning twilight). This is the best view for year. The Sept. (Autumnal) Equinox is at 2:49am EDT on the 22nd. The Moon is below Saturn on the 26th (SE eve.).



Now Showing

"Two Small Pieces of Glass"

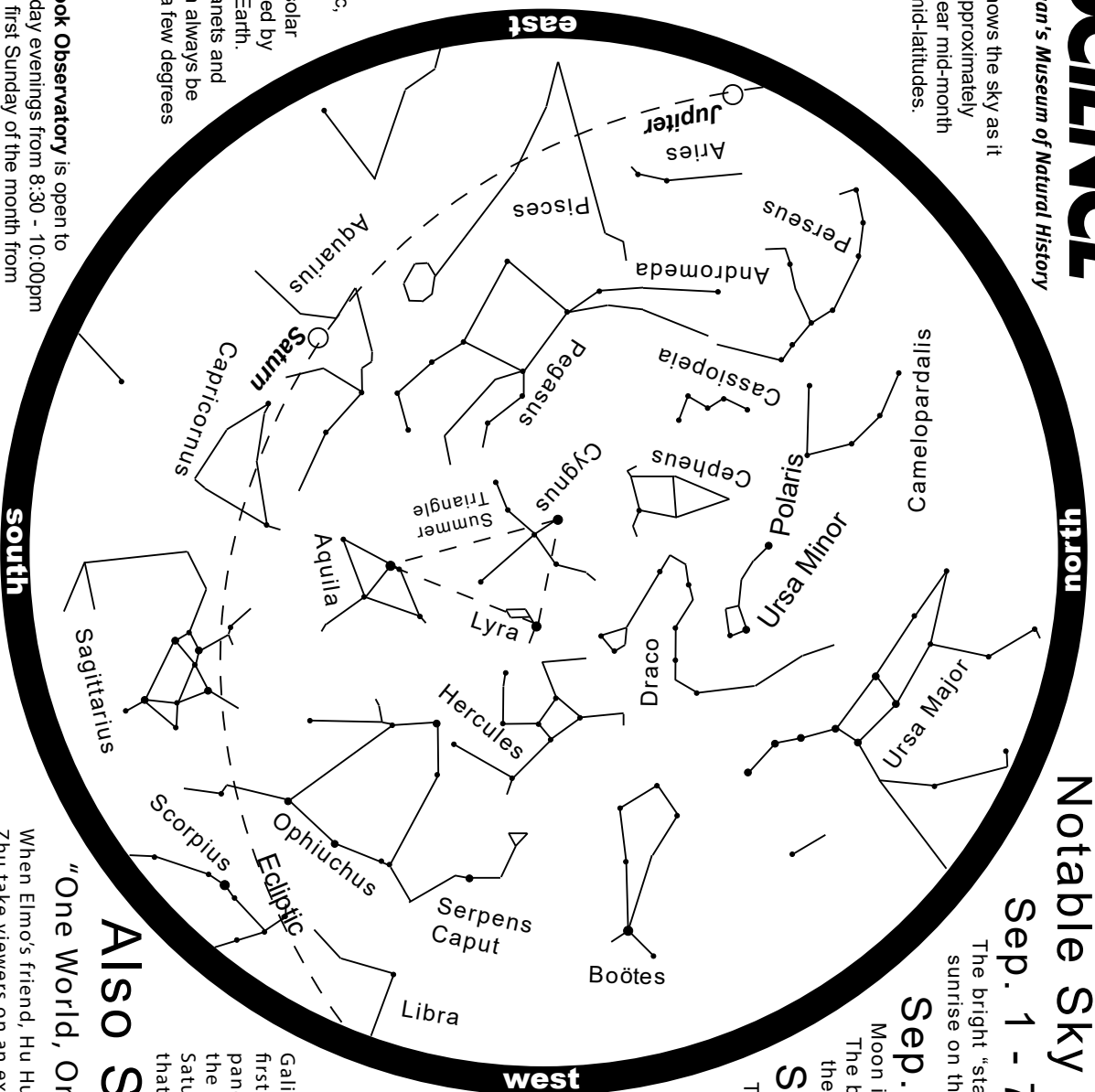
Galileo did not invent the telescope, but he was the first to use it to examine the sky. Telescopes have expanded our knowledge of the cosmos. We'll learn about the history of telescopes, explore the Galilean Moons, Saturn's rings, the structure of galaxies and view images that were made through our observatory telescope.

Also Showing

"One World, One Sky: Big Bird's Adventure"

When Elmo's friend, Hu Hu Zhu, visits from China. Big Bird, Elmo and Hu Hu Zhu take viewers on an exciting discovery of the Sun, Moon, and stars. They learn about the Big Dipper and the North Star and take an imaginary trip to the Moon where they learn that the Moon is a very different place.

For astronomy information visit <http://science.cranbrook.edu>



What is that dashed line? It's the ecliptic, the reference plane of the solar system, defined by the Sun and Earth. The major planets and the Moon can always be found within a few degrees of this plane.

The Cranbrook Observatory is open to the public Friday evenings from 8:30 - 10:00pm EDT, and the first Sunday of the month from 1:00 - 4:00pm for solar viewing.

For observatory information visit <http://science.cranbrook.edu/explore/observatory>





Ken Meloche - Messier 42 - the Orion Nebula Mosaic

September 2023


Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4 Labor Day	5	6	7	8	9
10	11 Cranbrook	12 Moon at Apogee: 406289 km	13	14 NEW MOON Great Lakes Star Gaze (tent.)	15 Great Lakes Star Gaze (tent.)	16 Great Lakes Star Gaze (tent.)
17 Great Lakes Star Gaze (tent.)	18	19 Neptune at Opposition	20	21 Macomb	22 Astronomy at the Beach (tent.) Astronomy Day (Fall)	23 Astronomy at the Beach (tent.) Stargate Open House Autumnal Equinox
24	25	26	27 Moon at Perigee: 359911 km	28	29 FULL MOON	30

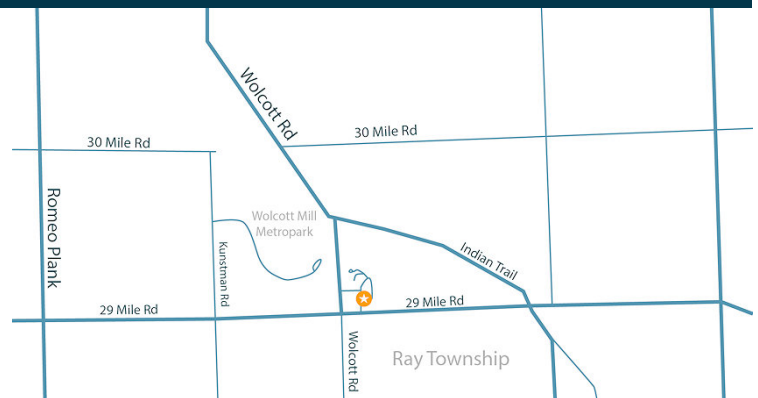


Stargate Observatory

Monthly Free Astronomy Open House and Star Party 7:00 PM, 4th Saturday of the Month Wolcott Mill Park - Camp Rotary Entrance

Advisory: Concerns are circulating in the amateur astronomy community about a possibility of COVID-19 being passed from one person to another via contact of different persons' eyes with a telescope eyepiece. Sharing telescopes may be considered by some to be high-risk due to the possibility of eyes touching eyepieces. Masks are encouraged, mandatory for children.

- Sky tours.
- See different telescope types in operation.
- Get help with your telescope.
- We can schedule special presentations and outings for scouts, student or community groups.
- Contact: outreach@warrenastro.org
- Find us on Meetup.com 



20505 29 Mile Rd (1.8 miles east of Romeo Plank Rd) Ray, MI 48096
82° 55'04" West Longitude, 42° 45'29" North Latitude

Observatory Rules:

- Closing time depends on weather, etc.
- May be closed one hour after opening time if no members arrive within the first hour.
- Contact the 2nd VP for other arrangements, such as late arrival time. Call 586-909-2052.
- An alternate person may be appointed to open.
- Members may arrive before or stay after the scheduled open house time.
- Dates are subject to change or cancellation depending on weather or staff availability.
- Postings to the Yahoo Group and/or email no later than 2 hours before starting time in case of date change or cancellation.
- It is best to call or email the 2nd VP at least 2 hours before the posted opening with any questions. Later emails may not be receivable (secondvp@warrenastro.org).
- Generally, only strong rain or snow will prevent the open house... the plan is to be there even if it is clouded over. Often, the weather is cloudy, but it clears up as the evening progresses.

Stargate Report

August Open House:

The night started off rather clouded but by 9pm it had completely opened up and turned into a really fantastic night. We zoomed in towards the Apollo 14 landing site on the Moon, then onto M13, M57, M27, M31, Saturn. We also had several people out on the field with telescopes, about 30 American Heritage Girls camping. We estimated the total count for the night was around 70 people. We closed up just about midnight.

September Open House:

Open House is currently scheduled for Saturday the 23rd. Just be aware this is also the night of Astronomy At the Beach at Island Lake State Recreation Area. So you will have to choose where to be.

Treasury Report

Treasurer's Report for August 31, 2023

BOA account:

Balance:.....\$27,428.37
 Received:.....0.00
 Expense1,398.51
 (Donation to Verde Valley Archaeology, Banquet deposit, printing banners/handouts)

PayPal Account:

Balance:.....\$117.94
 Received:.....86.24
 Paid27.12
 (Snack reimbursement)

Membership

We welcome new members Narasimharao Bobba, Guanyang Luo, and returning member, Gerald Persha.

Total Paid Memberships 105

Notes from the Treasury:

The treasury continues to be steady, with one or two new members a month. Is it time to renew your membership? Every New Year, many memberships expire. Please let me know via email at treasurer@warrenastro.org to verify your membership status. When you receive your membership flyer in the mail, fill it out and send it to: Warren Astronomical Society, P.O. Box 1505, Warren, Michigan 48090-1505. We strongly recommend using PayPal for faster service, but we also accept checks and cash at the meetings."

Good news for new memberships: from July 1 to the end of

Astronomical Events For September 2023

Add one hour for Daylight Saving Time

Source:

<http://astropixels.com/almanac/almanac21/almanac2023est.html>

Date	Time (h:m)	Event
3	2:44	Moon at Ascending Node
4	14:44	Jupiter 3.3°S of Moon
5	14:25	Pleiades 1.2°N of Moon
6	6:00	Mercury at Inferior Conjunction
6	17:21	LAST QUARTER MOON
9	22:32	Pollux 1.5°N of Moon
12	10:42	Moon at Apogee: 406289 km
12	21:00	Regulus 4.1°S of Moon
14	20:40	NEW MOON
16	14:19	Mars 0.7°S of Moon: Occn.
17	10:12	Spica 2.4°S of Moon
17	14:18	Moon at Descending Node
19	5:00	Neptune at Opposition
21	2:50	Antares 0.9°S of Moon
22	8:00	Mercury at Greatest Elong: 17.9°W
22	14:32	FIRST QUARTER MOON
23	1:50	Autumnal Equinox
23	13:00	Mercury at Perihelion
26	20:25	Saturn 2.7°N of Moon
27	20:05	Moon at Perigee: 359911 km
29	4:57	FULL MOON
30	11:49	Moon at Ascending Node

the year, all new memberships are good until December 31, 2024.

The process for ordering a physical copy of Sky & Telescope has changed, and prices have gone up above \$40 per year for a member of an astronomy club. Please let me know via email at treasurer@warrenastro.org if you would like more information.

Adrian Bradley,
Treasurer

Meeting Minutes

WARREN ASTRONOMICAL SOCIETY AUGUST BOARD MEETING (VIRTUAL) JULY 31, 2023 7:00PM

Meeting called to order at 7:00 PM. Officers present: President Bob Trembley, 1st VP Dale Partin, 2nd VP Jeff MacLeod, Secretary Mark Kedzior, Treasurer Adrian Bradley, Outreach Chair Kevin McLaughlin, Publications Chair Dale Thieme (quorum present).

OFFICER REPORTS:

President Bob Trembley reported on two upcoming events: August 12 Perseid Family Camp-out at Stony Creek - August 12 WAS Perseid Event at Stargate.

1st VP Dale Partin reported that the speaker for August 17 Macomb had to cancel - Ken Bertin will be presenting for that date.

2nd VP Jeff MacLeod gave July 22nd Open House report. He also reported that Marty Kunz repaired the WAS Big Dob trailer lights. He also reported on the tri-folds/swag/table banners from Vista Print to be ordered and have ready for the AATB event in September.

Secretary Mark Kedzior reported receiving West Bend Insurance updates for next years' policy renewal.

Treasurer Adrian Bradley reported WAS Treasury report is in the August WASP. He will be testing a donated all-in-one laptop to see if it works for our meeting.

Outreach Chair Kevin McLaughlin had nothing to report.

Publications Chair Dale Thieme reports the August Wasp is online - also reports he will be working with Jeff on the trifolds and banners.

OLD BUSINESS:

New meeting start times for both Cranbrook and Macomb are 7PM - email blasts reflect new start times highlighted in red. The WAS Promo video is in the final editing stages before being available. The new WAS Message Board has been installed - keys need to be picked up from park maintenance building at Wolcott Mill. Suggestions are needed as for contents we want to be placed in the message board for info on WAS and Stargate. No WAS Library update. Marty Kunz has moved about one half of the library to his residence. WAS Picnic Report - Mark Kedzior reported that about twenty-five people attended the picnic at pavilion at Wolcott Mill near Stargate. He has picnic report posted in August WASP.

NEW BUSINESS:

Discussion on December WAS Awards Banquet - Mark Kedzior reported visiting both the American Polish Century Club and the Ukrainian Cultural Center for available dates in December. With a limited number of dates available, the board asked Mark to see if either place has Monday December 11th or Wednesday December 13th still available to reserve for our banquet. He has acquired all information on pricing, menu

choices, AV tech setup, etc., for the board to decide at next board meeting and determine the cost of the ticket to the event. WAS Jackets - the search continues to find a vendor that carries and prints out the WAS logo on jackets, and other swag items (t-shirts, hats, etc.).

Motion to adjourn by Dale Partin - second by Adrian Bradley. Meeting adjourned at 8:13PM.

Respectfully submitted,

Mark Kedzior
Secretary, WAS

WARREN ASTRONOMICAL SOCIETY CRANBROOK (Hybrid) MEETING AUGUST 7, 2023 7:00PM

Meeting called to order for Cranbrook hybrid meeting at 7:00PM by President Bob Trembley(virtually). Persons in attendance: 22 - Zoom - 14 & YouTube - 5 @ 8:30PM).

Officer Reports:

President Bob Trembley reported that the new WAS Message Board was installed at Stargate Observatory. There will be two Perseid observing events on August 12th - one at Stony Creek and one at Stargate. The WAS Awards Banquet is scheduled for Monday, December 11th at the Ukrainian Cultural Center in Warren. More information and ticket prices will be announced at the September Cranbrook meeting. Photo submissions needed for the 2024 WAS Calendar. Astronomy at the Beach is scheduled for September 22-23 at Island Lake State Recreation Area near Kensington in Milford. New members and visitors were introduced. 1st VP reported on the speaker schedule. He also announced the MCC Paul Strong Scholarship recipient - Alexya Fields - she will receive \$1000 towards her educational expenses. 2nd VP Jeff MacLeod reported on the July 22nd Open House, the upcoming Perseid August 12th event and the next Open House on August 26th. Treasurer Adrian Bradley reports the WAS Treasury report can found in the August WASP and gave an Astronomical League update. Secretary Mark Kedzior reported on the July WAS Picnic (report can be found in August WASP). He also reported on details regarding the WAS Awards Banquet at the Ukrainian Cultural Center on Monday December 11th. No Outreach Report. Publications Chair Dale Thieme reports the August WASP is up online.

SPECIAL INTEREST GROUPS:

Solar - Bob Trembley reported on x-class flares on the sun. Double Stars - Riyad Matti reports double star viewing takes place at each Open House. David Levy read a 1799 poem from Thomas Campbell.

OBSERVING/ASTROPHOTOGRAPHY REPORTS:

Adrian Bradley showed his Perseid images taken from pre-

vious years. Bob Berta shared his images taken with his 80MM refractor of IC 1318 in Cygnus from his backyard near 25 Mile and Schoenherr and explained his equipment and processing technique used in taking his image.

SHORT PRESENTATION:

2nd VP Jeff MacLeod presented "Locating Apollo Landing Sites". In his presentation, Jeff gave all the parameters of how to locate landing sites using known craters and lunar features to observe areas where Apollo missions took place. Questions and discussion followed. To see his presentation in its entirety, go to: <https://www.youtube.com/warrenastro>

MAIN PRESENTATION

Dr. Paul Lynam, an astronomer at Lick Observatory, presented "The History and Science of James Lick and His Observatory" Dr. Lynam discussed "the life and times of James Lick and how he came to establish the world's first permanently-occupied high elevation astronomical observatory. He also talked about some of Lick Observatory's scientific "greatest hits" and the observatory's on-going contributions to cutting-edge research and technology." To see his presentation in its entirety, go to: <https://www.youtube.com/warrenastro>

Questions and discussion followed his presentation.

Meeting ended at 9:00PM.

Respectfully submitted,

Mark Kedzior
Secretary, WAS

WARREN ASTRONOMICAL SOCIETY

MACOMB(Hybrid)MEETING

AUGUST 17, 2023 7:00PM

Meeting called to order at 7:00 PM at Macomb, Room E208, by President Bob Trembley. Attendance - 18 - Zoom - 14 & YouTube - 4.

Officer Reports:

President Bob Trembley reported on the August 12th Perseid Camp-out at Stony Creek. He also reported the WAS Annual Awards Banquet will be held on Monday December 11th. 2nd VP Jeff MacLeod reported that Astronomy at the Beach will be held on September 22-23 at Island Lake State Recreation Area. Volunteers are needed to man club table, operate Big Dob or bring telescopes for visitors to observe through.

IN THE NEWS:

Naked eye Comet c/2023 P1 will soon be observable at estimated 3rd magnitude in September.

SPECIAL INTEREST GROUPS:

Solar - Bob Trembley shared recent solar images -also gave a Perseid meteor observing report.

ASK AN ASTRONOMY QUESTION:

Where do comets come from? Meteor showers? Ken Bertin explained briefly to those in attendance.

MAIN PRESENTATION:

Ken Bertin presented "The History of the Telescope". In part one of his extensive research in his presentation, he discussed the early astronomers/scholars and the early use of glass in corrective lenses. He also discussed the optical systems used in telescopes - refractors, reflectors and Cassegrain - and the people credited for their design and development.

His continuation (part two) of his presentation will take place at a future meeting.

To see his part one presentation in its entirety, go to: <https://www.youtube.com/warrenastro>

The meeting ended at 9:05PM.

Respectfully submitted,

Mark Kedzior
Secretary, WAS

W.A.S.P. Photo and Article Submissions

We'd like to see your photos and articles in the W.A.S.P. Your contribution is ESSENTIAL! —
This is YOUR publication!

Send items to: publications@warrenastro.org

Documents can be submitted in Microsoft Word (.doc or .docx), Open Office (.ods), or Text (.txt) formats, or put into the body of an email. Photos can be embedded in the document or attached to the email and should be under 2MB in size. Please include a caption for your photos, along with dates taken, and the way you'd like your name to appear.

The Warren Astronomical Society is a proud member of the

Great Lakes Association of Astronomy Clubs

GLAAC is an association of amateur astronomy clubs in Southeastern Michigan who have banded together to provide enjoyable, family-oriented activities that focus on astronomy and space sciences.

Club Name and Website	City	Meeting Times
Astronomy Club at Eastern Michigan	University Ypsilanti/EMU	Every Thursday at 7:30PM in 402 Sherzer
Capital Area Astronomy Club	MSU/Abrams Planetarium	First Wednesday of each month 7:30 PM
Farmington Community Stargazers	Farmington Hills	Members: Last Tuesday of the month Public observing: 2nd Tuesday of the month
Ford Amateur Astronomy Club	Dearborn	Fourth Thursday of every month (except November and December) at 7:00 PM
McMath-Hulbert Astronomy Society	Lake Angelus	Board and paid members-First Sunday of the month
Oakland Astronomy Club	Rochester	Second Sunday of every month (except May)
Seven Ponds Astronomy Club	Dryden	Monthly: generally the Saturday closest to new Moon
Sunset Astronomical Society	Bay City/Delta College Planetarium	Second Friday of every month
University Lowbrow Astronomers	Ann Arbor	Third Friday of every month
Warren Astronomical Society	Bloomfield Hills/Cranbrook & Warren/MCC	First Monday & third Thursday of every month 7:30 PM

Club and Society Newsletters

Warren Astronomical Society:	http://www.warrenastro.org/was/newsletter/
Oakland Astronomy Club:	http://oaklandastronomy.net/
McMath-Hulbert Astronomy Club	http://www.mcmathhulbert.org/solar/newsletter/
Ford Amateur Astronomy Club:	http://www.fordastronomyclub.com/starstuff/index.html
University Lowbrow Astronomers:	http://www.umich.edu/~lowbrows/reflections/

WAS Member Websites

Steven Aggas: <http://apache-sitgreaves.org/>

Jon Blum: [Astronomy at JonRosie](#)

Doug Bock:

Facebook: Northern Cross Observatory: <https://www.facebook.com/NorthernCrossObservatory>

Boon Hill and NCO Discussion <https://www.facebook.com/groups/369811479741758>

Flickr (astrophotography album): <https://www.flickr.com/photos/141833769@N05/>

YouTube channel: <https://www.youtube.com/channel/UC-gG8v41t39oc-bL0TgPS6w>

Bob Trembley:

<https://www.vaticanobservatory.org/profile/rtrembley>

[Vatican Observatory Foundation Blog](#)



This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Looking Beyond the Stars

Brian Kruse

Looking up in awe at the night sky, the stars and planets pop out as bright points against a dark background. All of the stars that we see are nearby, within our own Milky Way Galaxy. And while the amount of stars visible from a dark sky location seems immense, the actual number is measurable only in the thousands. But what lies between the stars and why can't we see it? Both the Hubble telescope and the James Webb Space Telescope (Webb) have revealed that what appears as a dark background, even in our backyard telescopes, is populated with as many galaxies as there are stars in the Milky Way.

So, why is the night sky dark and not blazing with the light of all those distant galaxies? Much like looking into a dense forest where every line of sight has a tree, every direction we look in the sky has billions of stars with no vacant spots. Many philosophers and astronomers have considered this paradox. However, it has taken the name of Heinrich Wilhelm Olbers, an early 19th century German astronomer. Basically, Olbers Paradox asks why the night sky is dark if the Universe is infinitely old and static & there should be stars everywhere. The observable phenomenon of a dark sky leads us directly into the debate about the very nature of the Universe - is it eternal and static, or is it dynamic and evolving?

It was not until the 1960s with the discovery of the Cosmic Microwave Background that the debate was finally settled, though various lines of evidence for an evolving universe had built up over the previous half century. The equations of Einstein's General Theory of Relativity suggested a dynamic universe, not eternal and unchanging as previously thought. Edwin Hubble used the cosmic distance ladder discovered by Henrietta Swan Leavitt to show that distant galaxies are moving away from us & the greater the distance, the faster they're moving away. Along with other evidence, this led to the recognition of an evolving Universe.

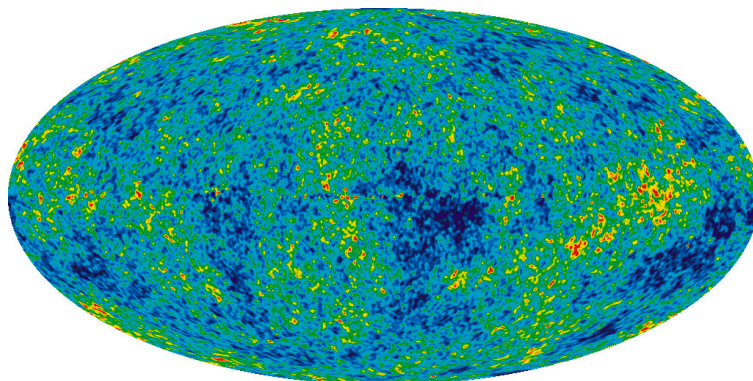
The paradox has since been resolved, now that we understand that the Universe has a finite age and size, with the speed of light having a definite value. Here's what's happening - due to the expansion of the Universe, the light from the oldest, most distant galaxies is shifted towards the

longer wavelengths of the electromagnetic spectrum. So the farther an object is from us, the redder it appears. The Webb telescope is designed to detect light from distant objects in infrared light, beyond the visible spectrum. Other telescopes detect light at still longer wavelengths, where it is stretched into the radio and microwave portions of the spectrum. The farther back we look, the more things are shifted out of the visible, past the infrared, and all the way into the microwave wavelengths. If our eyes could see microwaves, we would behold a sky blazing with the light of the hot, young Universe - the Cosmic Microwave Background.

The next time you look up at the stars at night, turn your attention to the darkness between the stars, and ponder how you are seeing the result of a dynamic, evolving Universe.



NASA's James Webb Space Telescope has produced the deepest and sharpest infrared image of the distant universe to date. Known as Webb's First Deep Field, this image of galaxy cluster SMACS 0723 is overflowing with detail. This slice of the vast universe is approximately the size of a grain of sand held at arm's length by someone on the ground. (Image Credit: NASA, ESA, CSA, STScI) <https://bit.ly/webbdeep>



The oldest light in the universe, called the cosmic microwave background, as observed by the Planck space telescope is shown in the oval sky map. An artist's concept of Planck is next to the map. The cosmic microwave background was imprinted on the sky when the universe was just 380,000 years old. It shows tiny temperature fluctuations that correspond to regions of slightly different densities, representing the seeds of all future structure: the stars and galaxies of today. (Image credit: ESA and the Planck Collaboration - D. Ducros) <https://go.nasa.gov/3qC4G5q>