



The W.A.S.P.



Volume 56 Issue 09

September 2024

The Warren Astronomical Society Publication

Aurora Season Continues



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 7:00 p.m.

First Monday meeting:	Third Thursday meeting:
Cranbrook: Institute of Science	Macomb Community College
1221 North Woodward Ave	South campus, Bldg. E, Room 208
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.

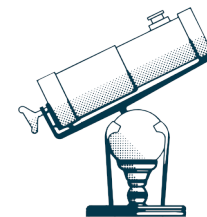
Stargate Observatory is owned and operated by the Society. Located on the grounds of Camp Rotary on 29 Mile Road, 1.8 miles east of Romeo Plank Road, Stargate features an 8-inch refractor telescope under a steel dome. The observatory is open according to the open house schedule published by the 2nd VP.

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About the Cover

The Sun's activity continues in a strong auroral season. The photo, by Adrian Bradley, taken on the 12th of August, is a good example of the show. Also, in the image is a possible STEVE (STEVE stands for Strong Thermal Emission Velocity Enhancement.) The inset of the sun is one taken by the Solar Dynamics Observatory on the 12th, showing what is driving all these lights.





Field of View



AATB Time!

Astronomy at the Beach

Fri. & Sat. Sept. 20 & 21

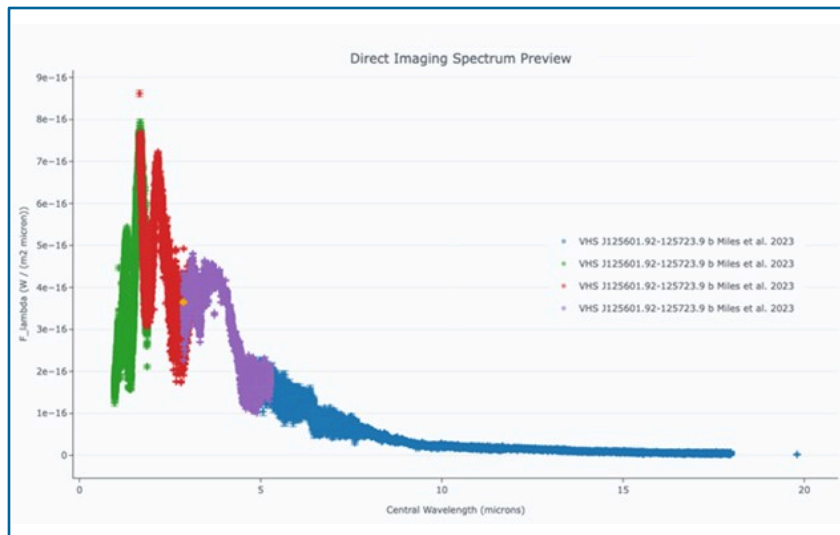
AATB is at a NEW LOCATION for *this year only* - Maybury State Park, west of Northville; Island Lake State Park will be under construction this fall.

The WAS will have 2 tables under the big club tent, and I plan on being there both nights, and I'd appreciate some company! Come join me, and chat with the public about how cool astronomy is!

Our "Big Dob" will be out on the observing field, along with several other telescopes from Great Lakes Association of Astronomy Clubs (GLAAC) member organizations. There will be a couple ZWO Seestar S50 electronic telescopes on the field, and one is the grand prize for a raffle.

Tell everyone you can think of about this fantastic FREE event!

Links: [Website](#), event on [Facebook](#), event on [Meetup](#).



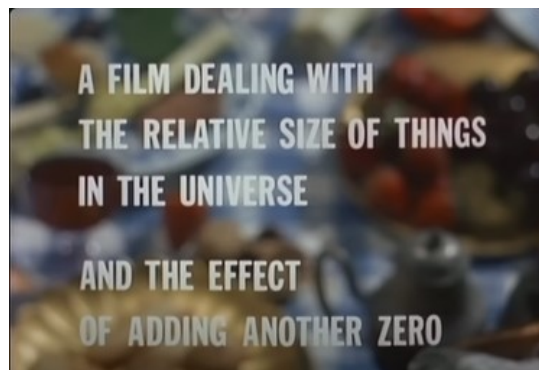
This plot, generated by the Atmospheric Spectroscopy Table, visualizes four direct imaging spectra taken by JWST of VHS J1256-1257

Exoplanet Update: 5747 Confirmed, 7209 Candidates

[ek-soh-plan-it] *noun*: A planet that exists outside of our solar system - either orbiting another star, or free-floating through the galaxy, unattached to a star.

The August 21st news post on [NASA's Exoplanet Archive](#) had the following headline: **Atmospheric Spectroscopy 2.0: Now with Direct Imaging Spectra!**

I find it *simply amazing* that we're now taking the spectra of planets orbiting distant stars - AND that data is publicly available, and I've played with it.



Powers of Ten / The Scale of the Universe

I recently became aware that some of our members have not seen *Powers of Ten*, the iconic video from 1977; this video was made before computer graphics were a thing, and is probably where I first learned how big the universe is.

A remake of the film was done in 2018, called the *Cosmic Eye*, and Business Insider has an animated version called *How Big is the Universe?* with up-beat music that would be good for kids.

Bob Trembley,
President



Observation Report

Sent at suggestion of "Handsome Joe" McBride, another service of the Grand Rapids Astronomical Association -- of which he is not a member, asked to leave. This *noticias* is to encourage solar observing, given the rise in sun-spot number.

----- Original Message -----

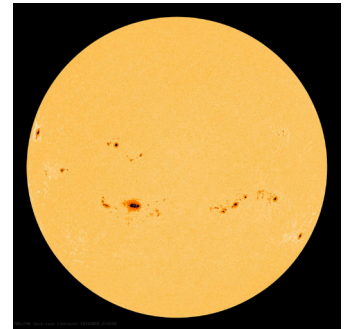
Subject: OBSERVING REPORT
Date: 2024-08-11 08:18
From: GM Ross
To: Joe McBride, Mjcw500

9 August

The Sun. Sun-spot array as extensive as any in this Activity Cycle. Entire aequatorial band, all but one in S. hemis. (likely). Possibly 8 groups, certainly 7. Dominating central disc: Waldmeier "E", and to left "D". Spots uncountable in former. One lone spot at W. limb, but fore-shortening eliminated any companions. One array was a poser, either 2 groups: "J" and "B", the latter because of wide separation of members, or a single group like Waldmeier "C" but too sparse (?), and with great latitude spread. Transparency excellent and seeing good despite west wind.

Transparency excellent and seeing good despite west wind.
5-cm. f /11 refractor with Mylar filter @ 45X

COMMENTARY: Taxonomy necessarily requires compromise. The Waldmeier scheme as issued in the 1950's and '60's by the Assn. of Var. Star Obs. originates with the International Astronomical Union. (No. 77) All the depictions -- "key outs" in botany -- show compression in latitude, but one should expect "out-liers" as in statistics. A more experienced observer could enlighten.



SDO/HMI Quick=Look Continuum: 2024-08-09



~~For Sale~~ Free

Forwarded from Bob Berta:

This is a great deal for someone who wants them. FREE!!! The battery charge/maintainer will only work with wet cell 12v batteries. These are used in heavy demand but accurate voltage required applications like ham radio or sump pump battery powered backups.

Contact Mark if interested.

-Bob Berta

----- Forwarded Message -----

From: "The Jefferys"
To: "All"
Sent: Wed, Aug 14, 2024 at 1:35 PM
Subject: Free items! C1700 Equatorial Mount; 80 Amp Boost Regulator

Hello. I have some items to give away to someone who could use them; send email to jefamily@wowway.com

1. Celestron C1700 Equatorial Mount (originally for C14 SCT, 50+ lbs.) Hi-capacity 50+ lbs.; tracking; can "go-to" manually using buttons; no auto go-to. Worked last time I tested it. 12 volt.
2. N8XJK 80 Amp Boost Regulator by TG Electronics. Often used by amateur radio enthusiasts to maintain battery voltage (up to 15+ volts) under high load, up to 80 amps (50% duty cycle). For use with Lead Acid batteries. Brand new. Original cost over \$400.





Classical Nova

A Shocking New Theory

by Gerald Persha, La Luz, NM

We are all dying of anticipation of the soon to be eruption from T Crb, a recurrent nova in the constellation Corona Borealis. This star last erupted in 1946 just two years before my coming on the scene and reached a visual magnitude of around 2. It usually sits around magnitude 10 for most of the time. A classical nova and a recurrent nova are the same with the difference being that we haven't been observing long enough to see any previous eruptions from a classical nova in that it may take thousands of years before enough hydrogen would accumulate on the surface of the white dwarf to trigger a nova.

A classical nova comprises a white dwarf and a main sequence or evolved late type star in a close orbit that files its Roche lobe. See figure 1¹. Mostly hydrogen from the main sequence star is ripped

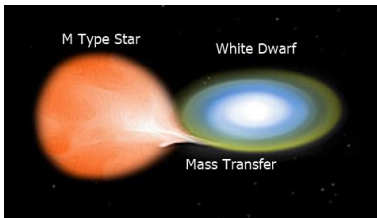


Figure 1¹

from its atmosphere through the Lagrangian point and ends up on the surface of the white dwarf. Like in the Oppenheimer movie, when enough hydrogen is accreted and the critical temperature and pressure is reached, a thermonuclear explosion results in a nova.

However, the story and the theme of this paper doesn't end with the bright fire ball but the interesting happenings that appear a week to about a month after the initial outburst.

What we see now when looking at T Crb is the red giant companion with a mass of 1.12 sols and spectral class of M3 orbiting a more massive but much dimmer white dwarf with mass of 1.37 sols embedded inside a dense cloud of material. This material from the red giant further dims the light for the white dwarf. I observed a "similar" classical nova V1112 Per for several weeks during the winter of 2020-2021. This nova reached a peak brightness of around

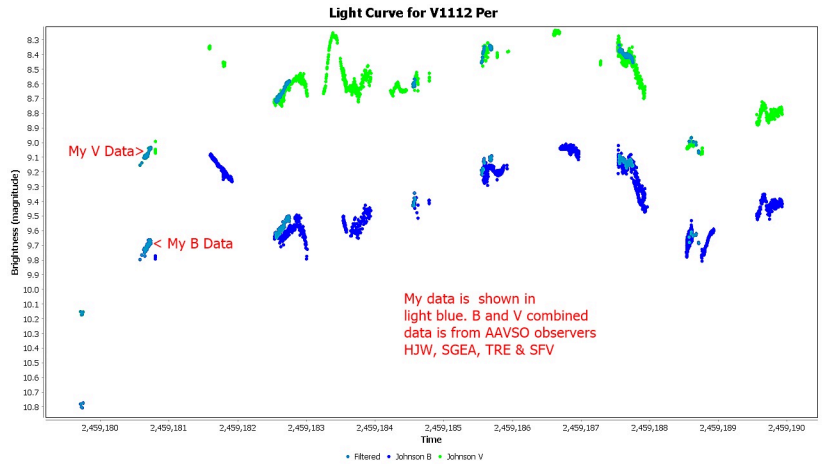
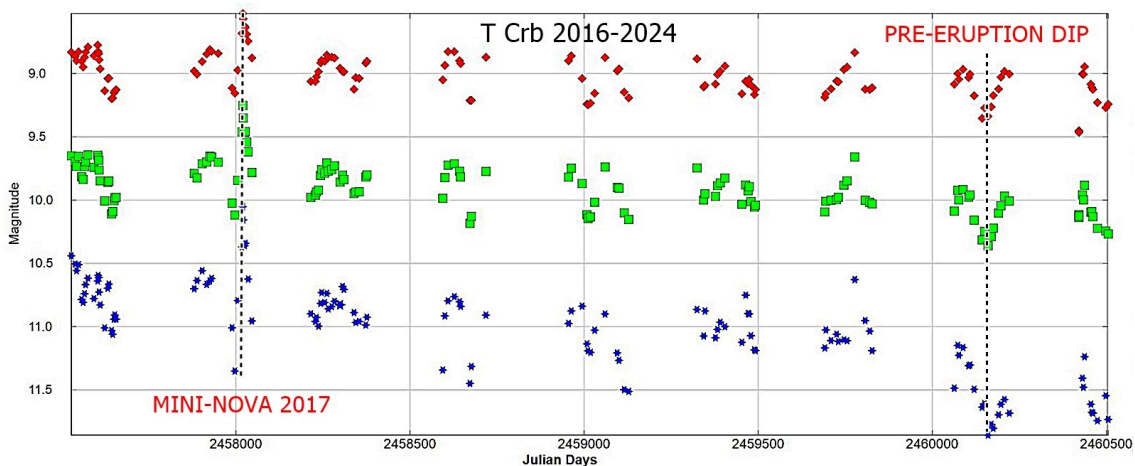


Figure 2

8 magnitude December 4th 2020 but now sits at 17 magnitude and still growing fainter. Both stars have similar B-V color index of around 0.9-1.0 which indicates that V1112 Per is also comprised of a M class star orbiting a white dwarf. I could find no other physical information of V1112 Per as the number of published papers was wanting.

What I observed in the light curve of V1112 Per were a number of flares with a duration on the order of hours that occurred during maximum light for a period of about 20 days. In figure 2, my data for both B and V is shown in light blue combined with other data from selected group of high quality observers in the AAVSO. I was baffled about this at the time and thought my photometer was acting up but when seeing others with similar results I remained baffled but confident in my instrument. I found out much later that these flares are the result of shock waves - "abrupt changes of pressure and temperature formed in the explosion debris"².

Continued on page 6



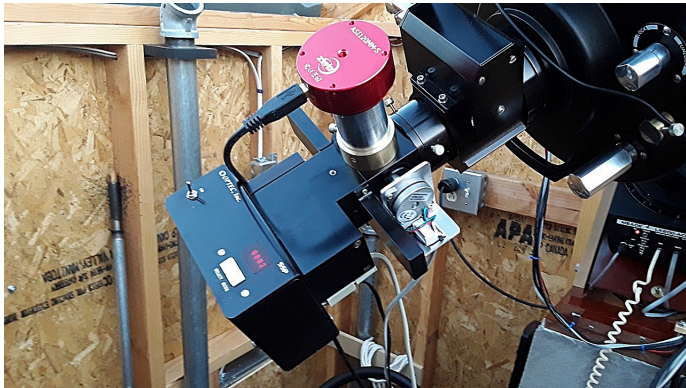
Continued from page 5

The theory of shock waves causing these flares is only about 10 years old and it is thought that the majority of the light from the nova is also a result of shock waves. When the nova has its initial outburst, ejecta is moving at a high rate obviously but later eruptions move at a higher speed. When the two shells come together, this creates a shock intense enough to generate gamma rays and a flash in the optical wavelengths. The gamma rays are evidence of the shock wave since the nova (if you can believe this) is not energetic enough to create them on its own - only supernovas are ^{3,4}.

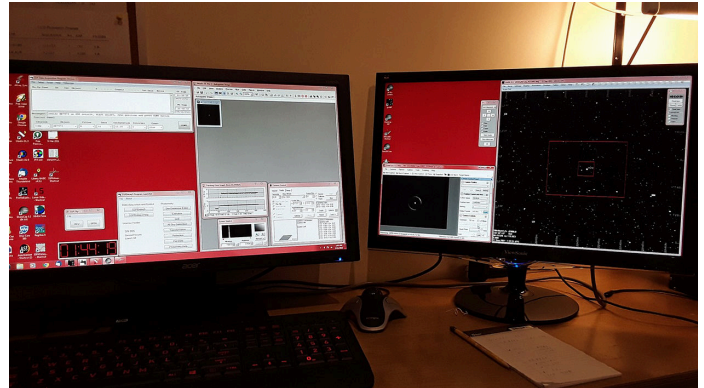
I intend to observe T Crb as I have for the last number of years in BVR standard bands with the intention of observing these flares with high cadence and precision when it goes nova. In figure 3 you can see my past 400 observation spanning nine years. Note the pre-eruption dip that occurred around August of 2023. This is similar to the dip that oc-

curred on May 1945 a mere nine months before the 1946 eruption - we are overdue. Also note the mini nova outburst in September 2017 which had all us observers in a panic for a short while until it fizzled.

For my photometry, I use a SSP-5a PMT photometer built by Optec with automated filter slider and a ASI120m camera mounted on the eyepiece. The flip mirror is controlled by a stepper motor that operates as well as the filter slider under software control that I wrote called SSPDataq. The telescope which is a Meade 10ACF and photometer are operated from an air conditioned (this is New Mexico high desert and it gets hot) attached room with a venerable and reliable WIN 7 computer and two 24-inch monitors. The controlling software runs scripts for doing photometry of the variables and comparison stars which also controls the telescope. It is pretty much hit the enter key and listen to AccuRadio until the sequence is completed.



SSP-5 and Camera 1



Computer Set-up

Sources:

- [1] NASA image ripped from Wikipedia https://commons.wikimedia.org/wiki/File:Making_a_Nova.jpg. File is in the public domain in the United States because it was solely created by NASA
- [2] <https://www.nasa.gov/universe/nasa-missions-help-reveal-the-power-of-shock-waves-in-a-nova-explosion/>
- [3] https://utf.mff.cuni.cz/librtfy/papers/0000816/aydi_et_al_including_pejcha_v906_main.pdf
- [4] <https://iopscience.iop.org/article/10.3847/1538-4357/acdfd3>

WAS Merchandise

Available at Cranbrook and Macomb meetings

WAS Pins

\$2.50
Each



WAS Bandana

\$5.00
Each



Endorsed by
the Unicycle
Cowboy!



Astronomical Bandanas at an astronomically low price, just \$5! featuring 33 Glow in the dark constellations and a WAS logo.

WAS Apparel Price List

T-SHIRTS

Black - Navy - Gray (Pink or Yellow if desired) - one imprint

Small - XL	\$15.00
2XL	\$18.00
3XL	\$19.00

LONG SLEEVE T-SHIRTS

Black - Navy - Gray - one imprint

Small - XL	\$19.00
2XL	\$21.00
3XL	\$22.00

CREW NECK SWEATSHIRT

Black - Navy - Gray - one imprint

Small - XL	\$22.00
2XL	\$24.00
3XL	\$25.00

LOGO COLOR SCHEMES:

Black background with gold/yellow artwork and lettering

Black background with blue lettering and gold/yellow artwork

Choose when placing order

ZIPPER HOODIE W/Pockets

Black Only (at this time) - one imprint

Small - XL	\$27.00
2XL	\$33.00
3XL	\$34.00

HATS

Black - Blue 2 1/2" logo

\$15.00

IMPRINT LOCATIONS:

Front left chest (3 1/4" logo)

Front or back (9" or 10" logo)

Back (12" logo for jackets or sweater)

Combination front left chest (3 1/4" logo) and back (9", 10" or 12" logo) - add \$7.00

Choose when placing order

IMPRINT ON YOUR CLOTHING ITEM: Logo + Imprint Charge

3 1/4" Logo - \$8.00

9" - 10" Logo - \$12.00

12" Logo - \$15.00

HOW TO ORDER:

Place order at the Cranbrook meeting on the first Monday of month -

Select garment type - color of garment - logo imprint and color scheme -

Pay in full for order to be placed -

Your order will be ready for pickup at next Cranbrook meeting -

(Your order may possibly be ready for the Macomb meeting following the Cranbrook meeting of that month - you will be notified if that is the case)

Contact Mark Kedzior @ bazonga952@hotmail.com with any questions

LOGO COLOR CHOICES

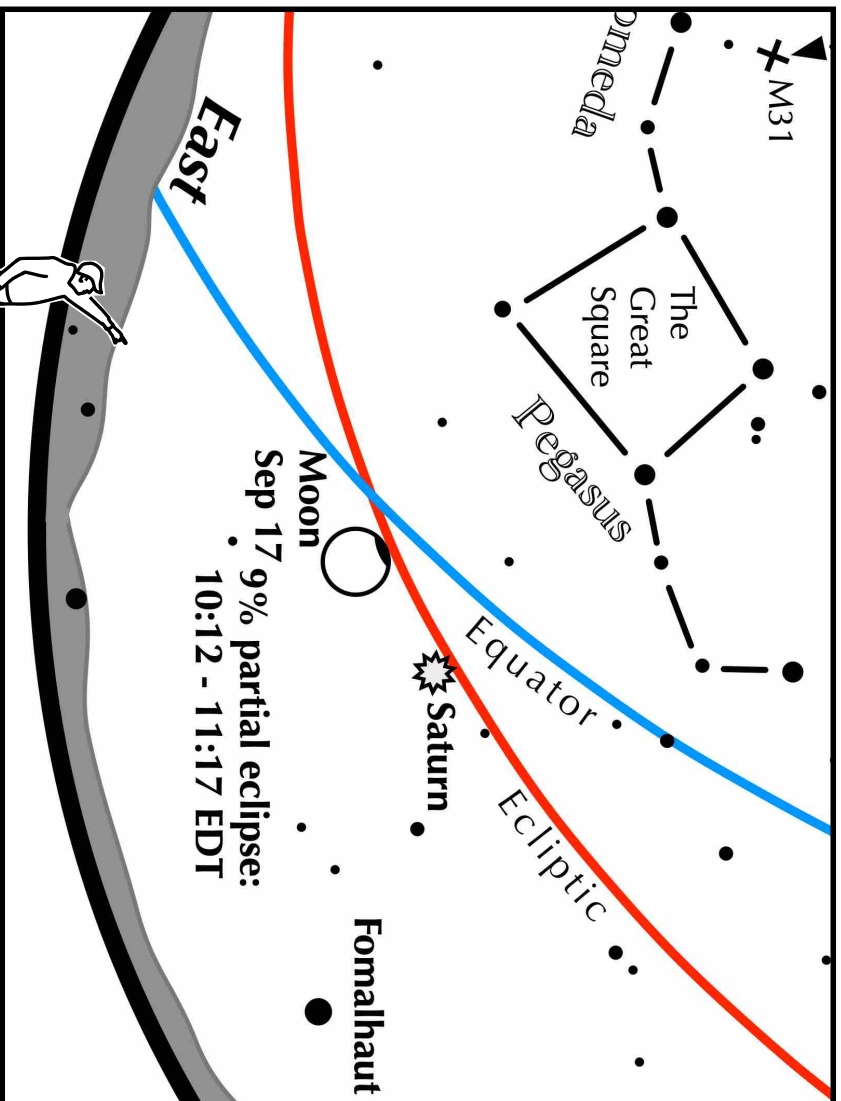


Gold/Blue

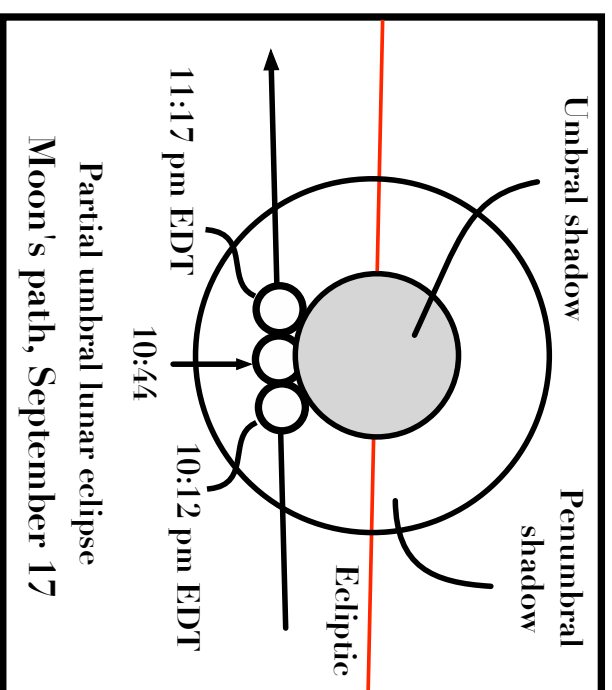


Gold-3D

A partial lunar eclipse that is a nibble, not a bite!



Sep 17 9% partial eclipse:
10:12 - 11:17 EDT



The Moon slides through a partial umbral eclipse

A very partial umbral lunar eclipse occurs on the night of September 17. Bring out the binoculars for a better look at Earth's shadow taking a nibble out of the moon. Only about 9% of the surface will be in umbral shadow. The event will be slight enough that the casual observer might not notice it.

Mid eclipse and the best view occurs at 10:44 pm EDT. West Coast observers will find it low above the southeastern horizon.

View to the southeast on September 17
from 10:12 through 11:17 pm EDT.
Mid eclipse lands at 10:44 pm





WAS Picnic Photos

Right:

Tim Skonieczny is shown with his spectroscope for seeing the spectrum of the Sun. Publications Director Vatsalya Dandibhotla is looking through it.

Below:

Dave Baranski is looking through the club solar scope while Riyad talks astronomy with another Jim Shedlowsky



Right:

A beautiful day at the W.A.S. picnic with Riyad Matti viewing a plethora of sun spots through Ken Heilig's vintage 6 inch Criterion while Mark Kedzior's BBQ billows in the background.

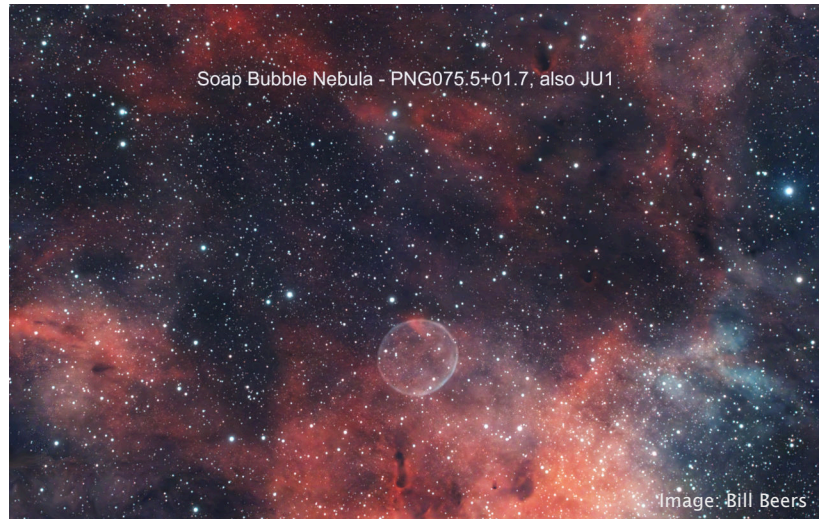


The View From C.W. Sirius Observatory

The Soap Bubble Nebulas

These are 2 very unique and very dim planetary nebulas. The Soap Bubble, PNG075.5+01.7, is located in the constellation Cygnus 800 light-years away. It was discovered in 2008 by amateur astronomer Dave Jurasevich, hence the Ju1 designation. Being located very near to the Crescent nebula (NGC6888), it is embedded in a diffuse nebula which, in conjunction with its faintness, is the reason it was not discovered until recently. The spherical symmetry of the shell is remarkable, resembling a soap bubble.

The Baby Soap Bubble nebula, We1-10, is also located in Cygnus 1400 light-years away. It was discovered by Ronald Weinberger in 1977, and I could not find much information on it. The Baby has a very low surface brightness which makes it extremely dim and difficult to image.



Both of these images took multiple nights to acquire. The Soap Bubble is 9 hours of total integration time using the 11" SCT f/7, ZWO2600MC camera, using the L-Extreme narrow band filter. And the Baby is 15 hours of total exposure time using the same set up. It would be almost impossible to view either of these planetary nebulas through a telescope here in Michigan due to their very low surface brightness. But they do make for a cool photo.



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

7:00 pm, September 9, 2024

Main Talk

The Many Dimensions of Russell Porter: Mr. Telescope Maker

By Jim Shedlowsky

If you ask the general public; Who was Russell Porter? You are likely to get a blank stare from most folks. Many might relate to his reputation as the “Godfather of Amateur Telescope Making”, a legacy that lives on through the 100 year old Stellafane annual Star Party and the many articles that he wrote and illustrated. This presentation will describe his life, talents, and legacy to society, with an emphasis on his novel contributions to the design of astronomical instruments and his impact on Amateur Astronomy in America.

About the Speaker

Jim Shedlowsky, long time member and former treasurer of the Warren Astronomical Society (WAS), and rockabilly legend (“Skee Brothers”), 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. Jim’s astronomical interests include observation and outreach. He has visited a number of major observatories. He and his wife winter in Mesa, Arizona and he participates in activities of the East Valley Astronomy Club.



Short Talk

The Mirror Lab

By Bob Trembley

Some of the largest mirrors ever made for ground-based telescopes are being created at the Richard F. Caris Mirror Lab at the University of Arizona. Bob will discuss the amazing process by which these giant telescope mirrors are made, and how they'll get from Tucson to their destination.

About the Speaker

Bob is the president of the Warren Astronomical Society, a volunteer NASA/JPL Solar System Ambassador, a podcast host and factotum for Vatican Observatory Foundation, and he's on the board of the Great Lakes Association of Astronomy Clubs which hosts the amazingly successful Astronomy at the Beach event.



Macomb

7:00 pm, September 19, 2024

Feature

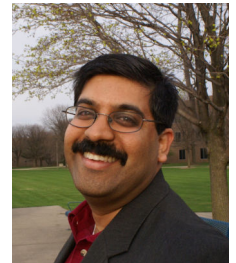
The Universe Through Superman's Eyes

By Rajib Ganguly

We've all learned from childhood about the fantastic powers that Superman possesses, including X-ray vision. The Universe that Superman sees is much different than what we mere humans see. In this talk, we'll take a tour of the Universe through Superman's eyes, finding black holes of all sizes, remnants from the explosion of stars, the gas between galaxies, and maybe even signs of dark matter.

About the Speaker

Dr. Rajib Ganguly is an Associate Professor in the Department of Applied & Engineering Physics within the College of Innovation & Technology at the University of Michigan-Flint. He also serves as the Director of General Education for all of UM-Flint. His research interests include Astrophysics, Supermassive Black Holes, Quasars, and Quasar Outflows.



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.



The 2024 Adirondack Astronomy Retreat.

Come gentle night, come loving black-brow'd night,
Give me my Romeo, and when I shall die,
Take him and cut him out in little stars,
And he will make the face of heaven so fine
That all the world will be in love with night,
And pay no worship to the garish sun.

For the first time in the almost two years since my wife Wendee died in September 2022, at this year's Adirondack Astronomy Retreat, at last I felt that life was returning to my bones. We did not have the best weather, with only one clear night, but what a night! And what a summer experience.

The primary reason for this change of spirit happened on the AAR's first day. After spending the last year refurbishing Minerva, my primary telescope, Ed Baker, with assistance from Mark Zdiarski, arrived with this truly beautiful and magnificent little telescope that he had carefully refurbished with care and with love, and with which I completed six hours of visual comet hunting on the single clear night. I was so moved by my first look at this telescope that I interrupted the closing question of Ed Genter's lecture to thank Ed Baker and offer to him the few Shakespearean lines that begin this article. The night prior was not clear but there were clear spots through which David Rosseter and I got a good first light on Jupiter. The first first light, in 1967, I could not see Jupiter, my favorite planet, but I did catch the Moon. It was satisfying to have, at last, a proper first light for Minerva.

This little telescope is 57 years old. It arrived on May 18, 1967, the day after I was almost expelled from the Montreal Centre of the Royal Astronomical Society of Canada. I have used it for each one of those 57 years.



The other reason is the people who gather each year. They are the most intelligent people I have ever known. Their only difficulty is that except for two, they are all in my generation or the one following. Those two, Sophie and Mark Scattolin, are just beginning their lives but they still have a sense of wonder about them, and about the night sky.

"In the fall," Sophie writes, "I will be starting a master's in environment and sustainable development at the Université de Montreal. My specialization within my program is biodiversity management, as I am quite passionate about conserving biodiversity. As for my plans after this program, I have none for now; I'm figuring it out as I go." Sophie's brother Marc also wrote. "I am involved in an honors project at Concordia University in Montreal. Ideally, I would get a job in natural language processing." This field belongs to the challenging field of artificial intelligence. Sophie, please keep figuring it out as you go. It took me half a century to figure out my own professional field in relating my passion for the night sky to the richness of English literature. And Marc, may your work in AI bring this difficult field of study to a happier and more productive state.

There is a third reason for the healing magic of our retreats, and that is the Twin Valleys campsite itself. There are places on Earth that are tied for its beauty, and maybe some that are more spectacular. But for the tranquility and peace of the site that hosts our Adirondack Astronomy Retreat, there is no place as stunning. May it forever let us celebrate the stars.



Above: Minerva version 2.0, from my living room. Picture by David Levy.

Left: A picture showing the retreat site at Twin Valleys. Photo by David Levy.

Michigan's Largest Free Astronomy Event
Astronomy at the Beach 2024

The Event will be held this year
at Maybury State Park!
49601 Eight Mile Road, Northville MI, 48167

Astronomers from across southeastern Michigan will set up solar telescopes during the afternoon, and telescopes of all shapes and sizes during the evening for you to observe numerous night sky objects!

This year, we will have a raffle to help offset the cost of the event. Our grand prize will be a ZWO Seestar S50 electronic telescope!

Tickets will be available to purchase in the tent with the Astronomy Club tables. Good luck!

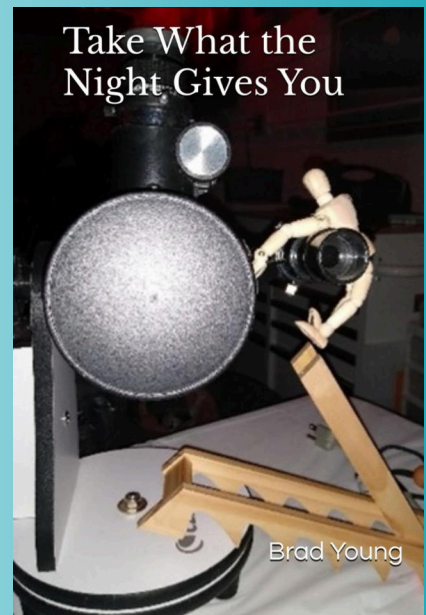
Event is FREE! No registration required. Parking requires Recreation Passport or park entry fee

Fresh off the Press

Take What the Night Gives You

From our astronomical friend, Brad Young. An anthology of astronomy articles appearing in several magazines and newsletters over the past six years. Amateur astronomers of every level and any (or no) equipment will find fresh takes on our hobby, including ideas to expand your observing and get more from the night sky.

Available from [Amazon](#)





Over the Moon



With Rik Hill

North Crisium

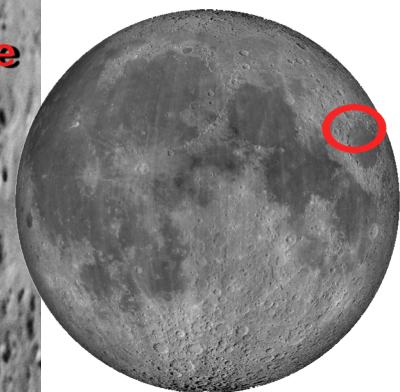
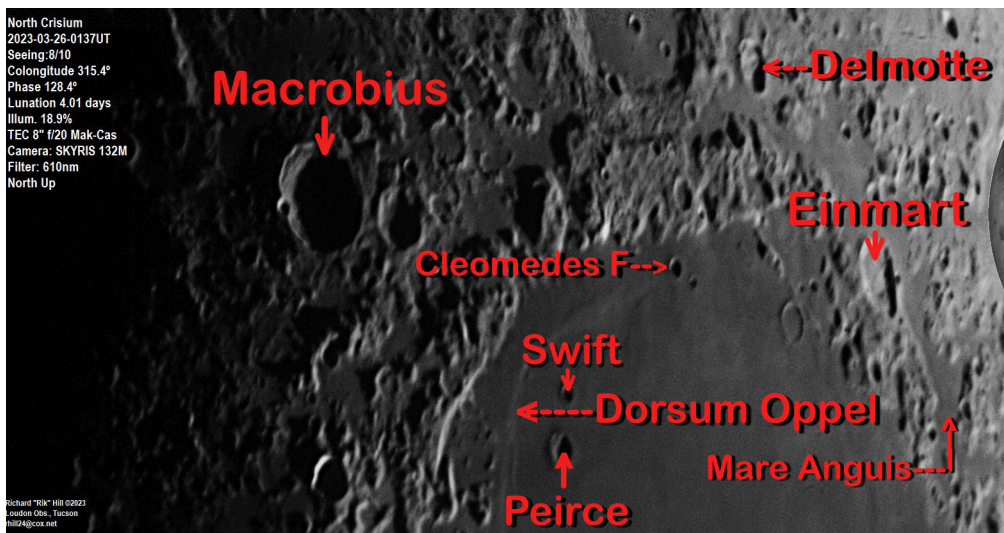
Mare Crisium (638km dia.) is a fascinating mare but too often we see the whole sea portrayed in images and many of the most fascinating parts are missed because of that. Here we have the northern third of the polygonal mare. This image spans the region from Macrobius (66km) on the left, to the flat floored crater Eimmart (48km) near the right edge. In Crisium itself we see the wrinkle ridge, Dorsum Oppel that parallels the north shore of the mare for over 300km. with the two craters Peirce (19km) and Swift(10) at the mid-point. At the upper end is a similar sized crater Cleomedes F (12km). On the outside of the northeast (upper right) edge of the mare is the long winding Mare Anguis or the Sea of Snake with Eimmart in its middle. This strange mare stretches on north to the crater Delmotte (34km). Note how the mountains that make the northern wall of Crisium have been eroded with the outpouring of the lavas from the mare. This forms interesting passes through these mountains.



shows up very bright at a wide range of colongitudes. One might suspect this of being the caldera on a volcano, but the crater does not have the morphology of a caldera and the rays on the floor of Crisium indicate an impact. Look for it the next time you are in the area!

This image is made from two 1800 frame AVIs stacked with AVIStack2 (IDL) and knitted together with AutoStitch then finally processed with GIMP and IrfanView.

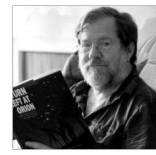
At the north interior of Crisium, not far from Cleomedes F, you can see a brilliant white spot. This had been reported as a "transient phenomenon" by observers over the years but a look at LROC QuickMap shows it to be a very fresh small kilometer sized crater at the top of a mountain that has an ejecta blanket spread over the mountains and the mare floor to the south. It has a very sharp and crisp rim indicating a young age. The interior appears bright as well. I have taken many images of this feature and have found it



Location Maps by Ralph DeCew



History S.I.G.



September 1994

This issues leads off with a detailed look at the Andromeda Galaxy during a SMURFS (Southern Michigan Universal Regional Festival of Stargazers) event in "Seeing M31" by Jeff Bondono, followed by "Computer Chatter" by Larry Kalinowski, where he covers the impact on Jupiter by comet Shoemaker/Levy. Said impact is further covered in "Sun, Moon, Planet and Deep Sky Records" by Frank McCullough. John Herrgott completes the issue with detailing the club's proceedings in "Minutes from John".

September 2004

Astro Chatter, by Larry Kalinowski, is the sole member contribution to the issue- but he packed it with information, leading off with a Hubble discovery. The issue finishes with the NASA contribution, Space Place "Resisting Retirement: Earth Observing 1".

Dale Thieme,
Chief Scanner

Incoming...

Modest proposal, resume Observing Report

From: G.M. Ross

To: Publications

This prospectus is, a) for the benefit of all astronomers in Michigan, b) to spite my former friend "Handsome Joe" McBride, c) undeniable affection for the Warren Soc.

GM Ross

I have your Title button waiting right here. —Ed.



WAS Name Tags

Name tags are back. If you wish to have one and are a dues paying member, contact publications@warrenastro.org and we'll get one printed up for you.



Seeing M31
Jeff Bondono

very faint and unobtrusive glow about 30 degrees wide and 10 degrees tall on the eastern horizon. These skies, and the company of the other attendees made for an observer's paradise. The heavy dew which fell both nights. The sound of the dew-zappers was pretty constant over the field on Friday night.

At about 2AM on Saturday morning, the sky to do some serious observing, and I decided to take advantage of the transparency of M31. Many of you know that I like to push my telescope a level or two beyond the norm, and my new telescope has not yet changed my observing personality. What started as a curiosity to see real dust lanes in M31 turned into a 2 hour connection with the ancient light of our nearest large neighbor. This article details what I saw. The abbreviations I have used are ' for arcminutes, N, S, E and W for north, south, east and west.

Unless otherwise noted, all observations were made with a 20mm Erfle eyepiece which yields a 40° field of view at 8x power with Felicity. Because of my field size and the elongated shape of M31, it was convenient for me to divide the galaxy into thirds, and the first part of my study was of the central third. When confronted verbally, it becomes necessary to come up with some names. I used the word nucleus to mean the very center of the galaxy, core to mean very bright area in the immediately vicinity of the nucleus, halo to mean the most... the sub...

on August 4-7 at an old airstrip about 25 miles north of Mio, Michigan. The star party was sponsored by the Genesee Astronomical Society, and was really a good time for anyone who is into serious observing. Other attendees from our club were Tom Bader, Mike Cyrek, Dave D'Onofrio, Fred Judd, and Angie Judd. I didn't really count, but I'd guess there were about 40 people there, with telescopes ranging in size from a 60mm refractor to a 20" Obsession dobsonian. Perhaps the most interesting was a 12" f9 dobsonian dubbed "Merlin" for a good view of Jupiter.

During our Cranbrook meeting of August 4 a cold front moved through southern Michigan, dropping us out of our humid mid-80° week and into a gorgeous mid-70° weekend. I went to the star party on Friday morning. The skies on both Friday and Saturday night were superb. These were the best skies I've ever seen in terms of transparency, except those at the Grand Canyon. The seeing left a bit to be desired, and a planetary observer would have been a bit disappointed. I rated the transparency as 8 of 9 both nights, and the seeing as 8 of 9 on Friday night and 5 of 9 on Saturday. Both nights showed a tremendously bright and detailed Milky Way arching overhead, visible down into the teapot of Sagittarius. The only light pollution I not...

The W.A.S.P. newsletter
september 2004

The Warren Astronomical Society Paper
P.O. Box 1505
Warren, Michigan 48090-1505
www.boonhill.net/was

September 2004

2004 WAS OFFICERS

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The WASP (Warren Astronomical Society Paper) is the official monthly publication of the Society. Each new issue of the WASP is mailed to each member and/or available online www.boonhill.net/was. Requests by other Astronomy clubs to receive the WASP, and all other correspondence should be addressed to the editor, Cliff Jones, email: cliffj@ameritech.net. Most popular graphics formats for inclusion in the WASP are strongly encouraged and should be submitted to the editor on or before the first of each month. Any format of submission is acceptable, however the easiest forms for this editor to use are plain text files. Most popular graphics formats are acceptable. Materials can be submitted either in printed form in person or via US Mail, or preferably, electronically via direct modern connection or email to the editor.

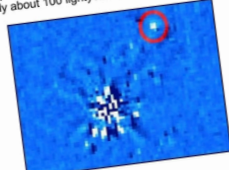
Disclaimer: The articles presented herein represent the opinions of the authors and are not necessarily the opinions of the WAS or the editor. The WASP reserves the right to deny publication of any submission.



Astro Chatter by Larry Kalinowski

The BBC News has reported that the Hubble Space Telescope may have taken the very first picture of a planet in another solar system. The new Hubble image was taken by John Debes, a graduate student at Pennsylvania State University, as part of a project to find planets around other stars. The problem with recognizing planets around other stars is a matter of contrast. The star is so bright that it completely washes out the image of any planets around it. John decided to lessen contrast by looking only at white dwarf stars. He surveyed seven dwarf stars and thought three of them had possible planets around them. It'll be awhile before the picture shown here will be confirmed as a star with a planet. It could also be a background star, so images will continue to be made to look for motion of the planet around the star. The planet circled in the picture, is about three or four times bigger than our planet Jupiter and is about the same distance from its star as

Neptune is from our Sun. The suspected planet is only about 100 lightyears away.



Mead's latest contribution to amateur astrophotography is called the DSI, for Deep Sky Imager. It's a color chip, developed by Sony, capable of up to an hour exposure time. The cost is just under \$300. Software includes all the capabilities of its old lunar and planetary imager called the LPI and more. So if you're looking for a good all around deep sky camera with amazing capabilities, this looks like it.

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

Pioneer 11 encountered Saturn 45 years ago on the 1st. Saturn is at opposition on the 7th rising in the east as the Sun sets in the west.

Sep. 8 - 14

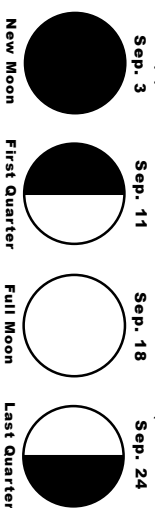
Moon is at the lower right of Antares on the 9th and to the left on the 10th (SSW evening).

Sep. 15 - 21

The Moon is to the right of Saturn on the 16th (SE evening) and there's an unimpressive partial lunar eclipse. Partial phase begins at 10:13pm EDT, maximum is at 10:44 (only 8% of the Moon is covered), ends at 11:15pm.

Sep. 22 - 30

Sep. (Autumnal) Equinox is at 8:44am EDT on the 22nd. Moon above Jupiter on the 23rd and upper left of Mars on the 25th (SE morn.)



Now Showing

"Tales of a Time Traveler"

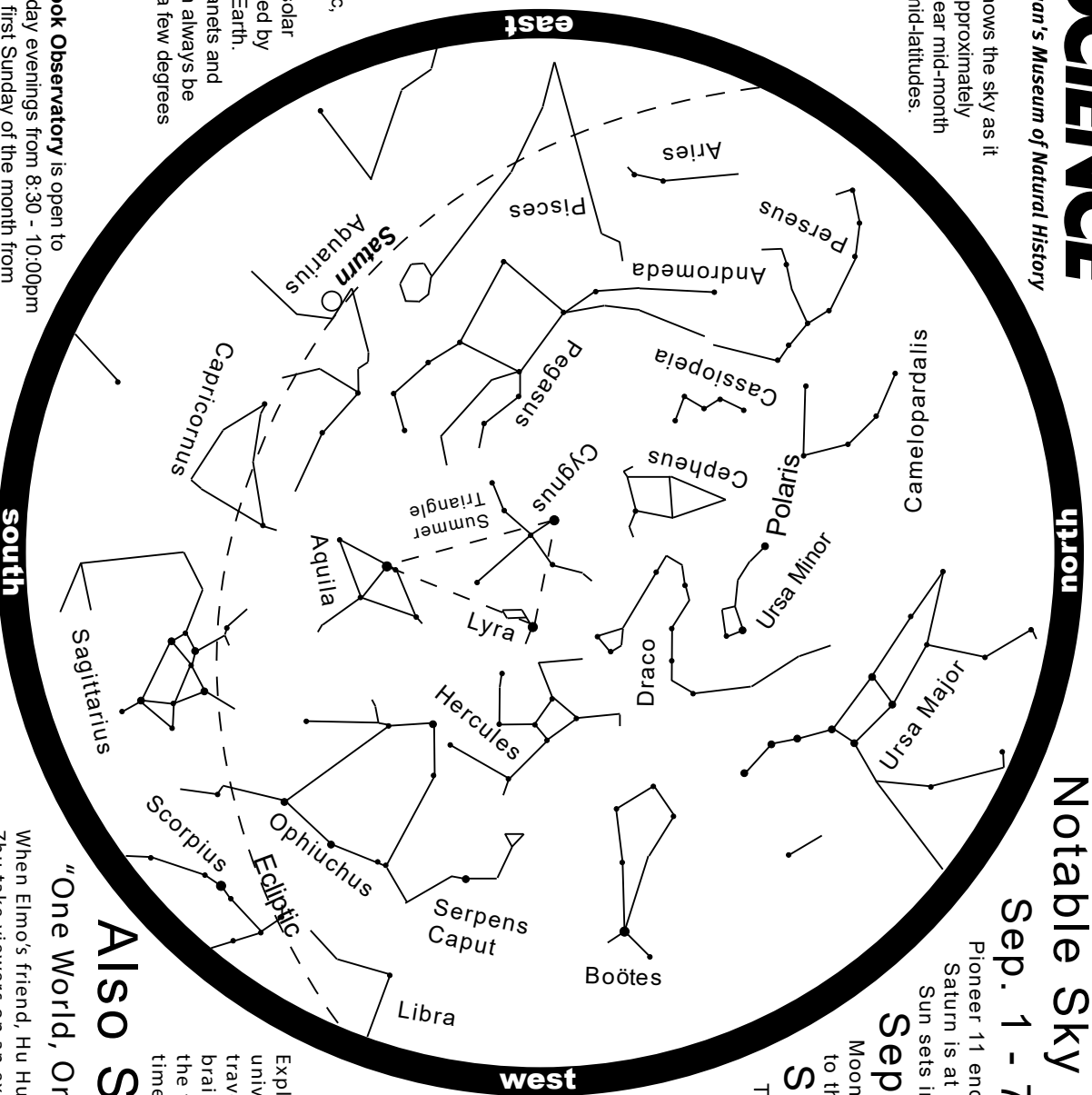
Explore ancient civilizations. Witness the birth of the universe. Journey to the edge of a black hole. Time travel surrounds us – from the biological clock in our brain to the history of life on Earth to the lives of stars, the time scale of the Big Bang, and the distortion of time by gravity. Narrated by David Tennant.

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/explorer/observatory>



Sun Spots - Steven Tennenberg

September 2024


Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 Labor Day NEW MOON	3	4	5 Moon at Apogee: 406215 km	6	7 Saturn at Opposition
8	9 Cranbrook	10	11	12	13 Astronomy at the Beach (tent.)	14 Astronomy at the Beach (tent.)
15	16	17 FULL MOON	18 Moon at Perigee: 357284 km	19 Macomb	20 Neptune at Opposition	21
22 Autumnal Equinox	23	24	25	26	27	28 Stargate
29	30					

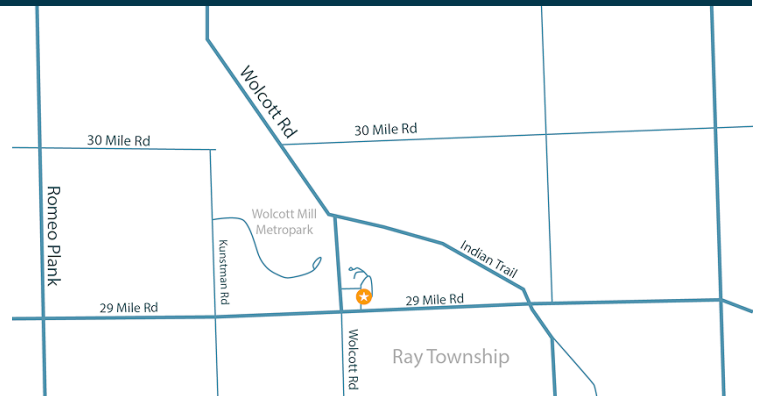


Stargate Observatory

Monthly Free Astronomy Open House and Star Party 7:30 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

Open House Report for August 24, 2024

The observatory was opened at the end of the picnic and the sky was clear. Many members and visitors attended the open house. We used the 8" refractor and Jeff used the 22" Dob. A few members set up their telescopes by the observatory. In addition to double stars, Saturn, Neptune, and the moon, many deep-sky objects were observed.

The observatory was closed after everyone left at about 2:00 am.

September Open House

The next observatory open house is scheduled for Saturday, September 28 starting at 7:30 pm.

Riyad I. Matti

2024 WAS 2nd VP Observatory Chairperson

Treasury Report

Treasurer Report for August 31, 2024

BOA Checking

Balance..... \$24,648.00

BOA Credit Card

Balance..... \$8.99

PayPal

Balance..... \$400.67

Membership:

We currently are at: 112

We wish to welcome new members: Jill Manning and Sunny Spilos

Reminder:

Anyone joining our club after July 1 gets an extension through the following year (for instance, the memberships of the above expire December 31, 2025.)

Astronomical Events For September 2024

Add one hour for Daylight Saving Time

Source:

<http://astropixels.com/almanac/almanac21/almanac2024est.html>

Date	Time (h:m)	Event
2	20:55	NEW MOON
4	21:00	Mercury at Greatest Elong: 18.1°W
5	0:43	Moon at Descending Node
5	5:13	Venus 1.2°N of Moon
5	9:55	Moon at Apogee: 406215 km
6	11:22	Spica 0.6°S of Moon
7	23:00	Saturn at Opposition
8	21:50	Mercury 0.4°N of Regulus
9	10:00	Mercury at Perihelion
10	7:29	Antares 0.1°N of Moon
11	1:06	FIRST QUARTER MOON
17	5:14	Saturn 0.3°S of Moon: Occn.
17	21:34	FULL MOON
17	21:44	Partial Lunar Eclipse; mag=0.085
17	21:57	Venus 2.2°N of Spica
18	8:26	Moon at Perigee: 357284 km
18	14:51	Moon at Ascending Node
20	18:00	Neptune at Opposition
22	5:17	Pleiades 0.2°S of Moon
22	7:44	Autumnal Equinox
24	13:50	LAST QUARTER MOON
26	5:25	Pollux 1.6°N of Moon
29	2:16	Regulus 3.0°S of Moon
30	16:00	Mercury at Superior Conjunction

Meeting Minutes

Warren Astronomical Society

Board Meeting

Monday, July 29, 2024 (via Zoom)

The meeting went live promptly around 7pm followed by Roll call and reports.

Officers and Reps Present

President: Bob Trembley, 1st VP: Dale Partin, 2nd VP: Riyad Matti, Treasurer: David Baranski, Secretary: Charlie Strackbein, Outreach Chair: Jeff Macleod, Publications: Vatshalya Dandibhotla

Member: Mark Kedzior

Officer Reports

President reports he had a great trip to Calumet in the Keweenaw Peninsula... no aurora

First VP: Dale Partin reports he has speakers through the November, needs speakers in the new year, contact him for more info.

2nd VP and Observatory Chair: Riyad Matti reports the open house was on the 28th (it was clear) well attended and additional scopes set up.

Treasury Report David Baranski reports We have in excess of 25K in the bank and over \$500 in PayPal and that our finances are all in order (please see his report elsewhere in this issue.)

Secretary Report Charlie Strackbein reports the June meeting notes were submitted, edited and published by Dale Thieme in the July Edition of the WASP.

Publications Reports the Wasp for July is Online, Vatshalya has access to the club's Facebook page and posted some copy there. We need to decide if we are going ahead with the club calendar this year. Working with Dale on getting access to WordPress so we can try and update the website, Meteor shower post/advertisement for August 10th was discussed. Determined we would advertise AATB on the Facebook page in a repost from GLAAC.

Old Business

Discussed replacing dome on Observatory, or new observatory with roll-top and or other improvements. A warming station was suggested? The Board determined to create a sub-committee.

Discussed Astronomical League memberships and communicating with - Adrian Bradley

Banquet Speaker: Nicole Zellner is scheduled.

Discussed Beaver Island State Wildlife Research Area certified as Michigan's first International Dark Sky Sanctuary and Following up with them, they seem interested via Facebook.

New Business

Renewal for the State of Michigan Department of Licensing and Regulatory Affairs (Corporation License Annual Fee).

Invoice from West Bend Insurance for our premium.

PICNIC - Aug 24th 4:30 PM, board to show up early

WAS is providing Burgers (40), Hot dogs (40) and Buns, Condiments, 2 liter sodas, Ice, Charcoal, cups/napkins/plates/plastic-ware.

Tablecloths - Dale Partin.

Hand sanitizer - Dale Partin.

Mark K will grill.

Jeff M. will buy food and dry goods.

Membership bring a dish to pass

Invite membership to bring items for swap meet; club has scopes for the swap meet. Invite GLAAC Other club members

The board authorized reimbursement for the mics to Dale Thieme.

Perseids Star Party - 10th Announcement to membership, Facebook, Everywhere! Libraries NSN Marty Kunz (Solar Marty) Memorial at Picnic? We need to get \$400 to GLAAC. We have 2 tables at Astronomy at the Beach - Sept. 21 \$ 22. Bob T. will be there. the Big Dob? We have a driver, trailer needs to be emptied.

Announce to membership and boost to the public. Bring flyers to picnic/stargate

To Dos: Get with David and Adrian about GLAAC fee, Get Jeff MacLeod Brian Ottum's Library list, Get Perseids event on Metroparks calendar, Put Perseids on NSN, Look into grants for replacing the dome, Set a date and time and have an hour-long meeting with Jeff re: NASA Night Sky Network Jeff Macleod now has an NSN account PO Box Authorized Users for 2024 Need new individuals to update document on file at Warren PO (Mark?)

Dale P called to adjourn at 7:07 PM, Riyad 2nd.

Warren Astronomical Society

Cranbrook Meeting

Monday August 5, 2024

The meeting started promptly at 7:00pm We had 34 at Cranbrook, 6 on Zoom, 3 on YouTube.

Officer Reports

President: The Board has a request: Do we want to spend our bank account on replacing the dome on Stargate Observatory, or building a new observatory with a roll-top roof - which will require some coordination with the Metroparks? We're looking to have a Sub-committee to hash this out.

1st VP: Dale Partin reported our presentation schedule is booked through the fall; always looking for short 15 min and hour-long presentations.

2nd VP: Riyad Matti reported the open house was on the 27th (it was clear) and well attended. Additional scopes were setup. Worth mentioning again - The dome at Stargate Observatory has been fixed!!

Perseids Star Party - August 10th

Treasurer: David Baranski We have 25+K in all accounts and cash box.

Secretary: Charlie Strackbein reports recent minutes are in our newsletter

Outreach: Jeff Macleod's report can be found elsewhere in this month's publication

Publications: Vatshalya Dandibhotla reports the WASP is online and gave a call out for Calendar pictures - if we're interested in having an photo in the calendar this year, we need pics! And with the eclipse, it might just be an all-eclipse (or mostly eclipse) calendar!

Announcements

WAS wearables are purchasable from Mark Kedzior - you can check what's available in the newsletter (or with Mark if he's in attendance)

Astronomy at the Beach will be Sept. 21 & 22 at Maybury State Park - west of Northville this year. Island Lake State Park will be closed due to construction.

GLAAC meetings are held the 2nd Monday of the Month. If you are interested in helping plan, or advertise Astronomy at the Beach, we need your help.

PICNIC - Sat August 24th at 4:30 PM. Members from other SE Michigan astronomy clubs are welcome to attend.

Great Lakes Star Gaze will be held in Gladwin October 3 - 6, 2024

Astronomy In the News

Bob's Exoplanet Update

5741 Confirmed Exoplanets, up 63. 7,203 Candidates, unchanged (from last meeting). TOI-1824b is an exoplanet oddity. Nearly 19 times the mass of Earth, but only 2.6 times the size of Earth 2.8 gees on the surface... assuming it has a surface...It could have an Earth-like core surrounded by an unusually thin, hydrogen atmosphere. Another possibility is the planet has a water-rich core beneath a steam atmosphere.

Beaver Island State Wildlife Research Area certified as Michigan's first International Dark Sky Sanctuary - if anyone is interested in doing the drop-in telescope thing - they're interested. If someone wants to organize a club trip there - DO IT!

Br. Guy Consolmagno, and Br. Bob Macke were at a conference in Brussels last week- they talked about meteorite collection curation, OSIRIS-REx samples, Mars rocks that look like they might have been influenced by life...

Two stories about Mars rocks:

July 21, 2024, NASA's Perseverance rover 22nd rock core - found a vein-filled rock with "leopard spots" containing both iron and phosphate. "Analysis by instruments aboard the rover indicates the rock possesses qualities that fit the definition of a possible indicator of ancient life."

Yellow crystals of elemental sulfur were revealed after NASA's Curiosity rover happened to drive over a rock and crack it open on May 30, 2024. Elemental sulfur has never been found on Mars before - only Sulfur as part of sulfates. NASA has a 360 video from the rover's viewpoint showing a field of stones labeled "Sulfur Stones"

Special Interest Groups

Solar

The ramp-up to solar maximum continues: the Sun's magnetic field is about to flip - 3-4 months. spaceweather.com has 10 named sunspots this morning, and an absolutely MONSTER sunspot is rotating into view: 2 X-class flares over the last 72 hours. A TON of M and C-class flares today and yesterday. On Aug. 4th, a G3-class geomagnetic storm caused aurora in the sky from California at 37°N latitude

Double Star / Perseids (see Riyad at Stargate)

Short Talk

Jeff MacLeod demonstrated how really complicated tides are.

Snack Break (brought to us by Mike O'Dowd and Laura Wade.)

Feature talk

Bob "Astro Trebeck" Trembley tested the group's mettle and knowledge in "Astro Jeopardy", dividing the attendees in 4 teams.

The meeting closed around 9:15

Warren Astronomical Society

Macomb Meeting

Thursday, August 15, 2024

The meeting commenced promptly by W.A.S. President, Bob Trembley at 7:00 PM.

Attendance: 11 in the room, 11 participants on Zoom, 8 on YouTube

Announcements:

Members in need of a lanyard-ready WAS badge should contact Publications at publications@warrenastro.org. New members not attending Cranbrook meetings can notify Charlie Strackbein to have a badge brought to the next Macomb meeting. Fresh name tags from January 2024 on are available.

2025 Calendar Contributions: Members are encouraged to submit their astronomical images for inclusion in the 2025 calendar. Submissions should be sent to publications@warrenastro.org.

WAS Wearables: Mark Kedzior is in charge of WAS-branded wearables, which can be purchased via the newsletter or directly from Mark if he's present at the meeting.

Astronomy at the Beach: Scheduled for September 20 & 21 at Maybury State Park. Bob plans to attend and requests additional club members to join.

GLAAC Meetings: Held on the 2nd Monday of each month. Members interested in assisting with the planning or promotion of Astronomy at the Beach are encouraged to participate. The final meeting before the event coincides with the next W.A.S. meeting.

GLAAC Groups.io: Members can stay updated with GLAAC activities via their groups.io account: <https://glaac.groups.io/>.

Officers' Reports:

President: Bob Trembley reported the Perseids Star Party on August 10th was a success. He reminded the group that the Club Picnic was coming up: Saturday, August 24th, at 4:30 PM. He also mentioned the formation of a Stargate Observatory Committee. The Board is considering whether to replace the dome on Stargate Observatory or build a new observatory with a roll-top

roof. This decision requires coordination with Metroparks. Volunteers for this committee include Charlie Strackbein and Tom Cervenak. Additional volunteers are welcome, and the committee will need to establish a communication platform.

1st VP: Dale Partin is always looking for short 15 min and hour-long presentations.

2nd VP: Riyadh Matti reported on a recent Stargate event, highlighting the observation of Venus, double stars, and Saturn. The event saw participation from 20 -30 people, with clear skies lasting until 2:30 AM.

Treasurer: David Baranski: reports that we have 24K+ in the bank account, ~400 in PayPal. Details are posted in the WASP.

Secretary: Charlie Strackbein reports the June Board Meeting and July Meeting Notes were submitted, edited and published in the August Newsletter by Dale Thieme

Outreach Chair: Jeff MacLeod provided an update on future observing plans, including a nova watch that could last months to a year. Outreach updates can be found elsewhere in this edition

Upcoming Events:

Astronomy at Hobby Day: Scheduled for Saturday, August 17th, from 10:00 AM to 1:00 PM at Crosswinds Marsh.

Blue Moon on the Beach Event: Also on August 17th at Kensington.

Astronomy in the News:

Exoplanets: The number of confirmed exoplanets has increased to 5,743, with 7,204 TESS candidates. The JWST has added spectra for 36 planets to the NASA Exoplanet Archive.

IAU Lunar Clock: The IAU has called for a lunar timekeeping standard.

Hydrated Minerals on Psyche: JWST has detected hydrated minerals on asteroid 16 Psyche, which may indicate internal water or impacts.

Senate Bill on Satellite Interference: A Senate bill proposes the creation of a center to study satellite interference with astronomy, which Jim Shedlowsky would appreciate.

There were discussions on the Beaver Island International Dark Sky Area. A visit is planned to present there, with ferry arrangements to the island being considered.

Members discussed the recent discovery of Mars rocks with possible signs of life, including elemental sulfur formations.

Observations of sunspots were also noted, with one sunspot spanning 119 Earths wide.

Special Interest Groups (SIGs):

Solar: Reports of an X-class solar flare from sunspot AR3784 with a G1-class geomagnetic storm watch.

Double Stars: Riyadh is still observing T Coronae Borealis at Stargate.

Light Pollution: Bob has created a detailed map identifying light pollution near Stargate. The group is exploring steps to address this issue, potentially starting with updating local lighting codes.

Observing Reports / Astro photos

Jeff McLeod saw Jupiter and Mars together in his eyepiece

on the 14th. Looking forward to Saturn and Moon combo on the 20th. Bob Berta shared images he took of the sun in Ha, NGC7380, Lobster Claws Nebula, Bubble Nebula, and M52.

Snack break provided by Tina Wong.

Feature Talk:

Dale Hollenbaugh: Presented on "Introduction to Smart Telescopes, Featuring the ZWO Seestar S50." The ZWO Seestar S50 is also the grand prize for the Astronomy at the Beach raffle.

The meeting concluded around 9:15 PM.

Respectfully Submitted,

Charlie Strackbein,
Secretary

Outreach

August

Aug 13th

Mark Kedzior was at Memphis Library talking about basic astronomy.

Aug 17th

Riyad had a group of Girl Scouts out at Stargate Observatory

Upcoming:

Sept 20 & 21

Astronomy at the Beach. details at <https://www.glaac.org/>

This is our BIG event for the year and we could use volunteers at all levels. Bob could use more people at the WAS table. Riyadh could use more people to help run the Big Dob telescope. We also always need more WAS members out on the field with their scopes showing people views of the night sky. PLEASE HELP US, if interested email info@warrenastro.org



2023 Astronomy at the Beach. Image: Doug Bock

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!

Marvelous Moons

By Kat Troche

September brings the gas giants Jupiter and Saturn back into view, along with their satellites. And while we organize celebrations to observe our own Moon this month, be sure to grab a telescope or binoculars to see other moons within our Solar System! We recommend observing these moons (and planets!) when they are at their highest in the night sky, to get the best possible unobstructed views.

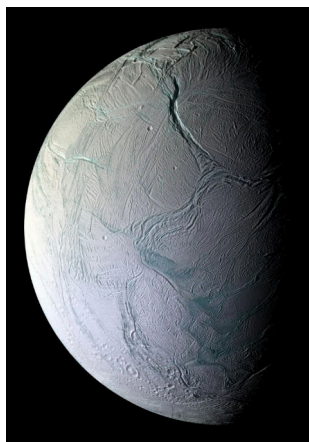
The More the Merrier

As of September 2024, the ringed planet Saturn has 146 identified moons in its orbit. These celestial bodies range in size; the smallest being a few hundred feet across, to Titan, the second largest moon in our solar system.



The Saturnian system along with various moons around the planet Saturn: Iapetus, Titan, Enceladus, Rhea, Tethys, and Dione. Credit: Stellarium Web

Even at nearly 900 million miles away, Titan can be easily spotted next to Saturn with a 4-inch telescope, under urban and suburban skies, due to its sheer size. With an atmosphere of mostly nitrogen with traces of hydrogen and methane, Titan was briefly explored in 2005 with the Huygens probe as part of the Cassini-Huygens mission, providing more information about the surface of Titan. NASA's mission Dragonfly is set to explore the surface of Titan in the 2030s.



This mosaic of Saturn's moon Enceladus was created with images captured by NASA's Cassini spacecraft on Oct. 9, 2008, after the spacecraft came within about 16 miles (25 kilometers) of the surface of Enceladus. Credit: NASA/JPL/Space Science Institute

Saturn's moon Enceladus was also explored by the Cassini mission, revealing plumes of ice that erupt from below the surface, adding to the brilliance of Saturn's rings. Much like our own Moon, Enceladus remains tidally locked with Saturn, presenting the same side towards its host planet at all times.

The Galilean Gang

The King of the Planets might not have the most moons, but four of Jupiter's 95 moons are definitely the easiest to see with a small pair of binoculars or a small telescope because they form a clear line. The Galilean Moons - Ganymede, Callisto, Io, and Europa - were first discovered in 1610 and they continue to amaze stargazers across the globe.



The Jovian system: Europa, Io, Ganymede, and Callisto. Credit: Stellarium Web

- **Ganymede:** largest moon in our solar system, and larger than the planet Mercury, Ganymede has its own magnetic field and a possible saltwater ocean beneath the surface.
- **Callisto:** this heavily cratered moon is the third largest in our solar system. Although Callisto is the furthest away of the Galilean moons, it only takes 17 days to complete an orbit around Jupiter.
- **Io:** the closest moon and third largest in this system, Io is an extremely active world, due to the push and pull of Jupiter's gravity. The volcanic activity of this rocky world is so intense that it can be seen from some of the largest telescopes here on Earth.
- **Europa:** Jupiter's smallest moon also happens to be the strongest candidate for a liquid ocean beneath the surface. NASA's Europa Clipper is set to launch October 2024 and will determine if this moon has conditions suitable to support life. Want to learn more? Re-watch the July 2023 Night Sky Network webinar about Europa Clipper.

Be sure to celebrate International Observe the Moon Night here on Earth September 14, 2024, leading up to the super full moon on September 17th! You can learn more about supermoons in our mid-month article on the Night Sky Network page!