



The W.A.S.P.



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November 2023

The Warren Astronomical Society Publication

ANNULAR ECLIPSE 2023



MICHIGAN STYLE

The WASP

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

Dale Thieme, Editor

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	Entire Board	board@warrenastro.org



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.

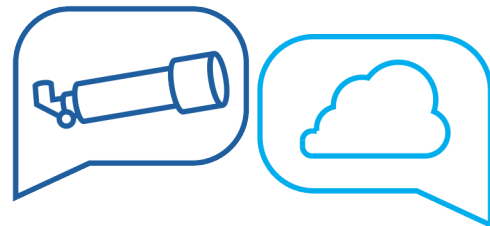
Stargate Observatory is owned and operated by the Society. Located on the grounds of Camp Rotary on 29 Mile Road, 1.8 miles east of Romeo Plank Road, Stargate features an 8-inch refractor telescope under a steel dome. The observatory is open according to the open house schedule published by the 2nd VP.

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About the Cover

Near max eclipse for our region, the sun shining though a break in the clouds. Taken by Adrian Bradley at Albert Sleeper State Park.



Discussion Group Meeting

Come join us for a discussion about astronomy, space news, and what-not!





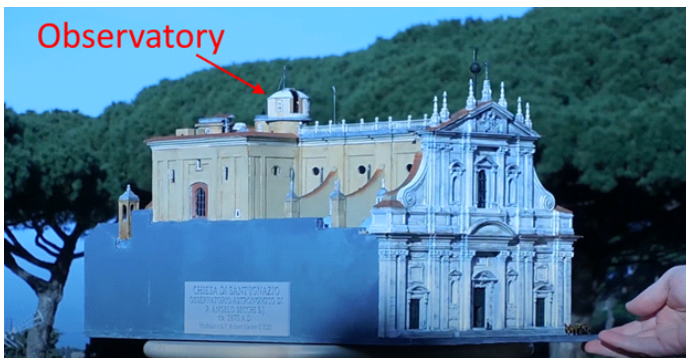
Field of View

OSIRIS-REx Returns

NASA's OSIRIS-REx asteroid sample return mission has returned its payload to Earth - there's now a boatload of asteroid bits at the Johnson Space Center in Houston - and I happen to know someone who will be doing analysis on those bits! Br. Bob Macke of the Vatican Observatory.

Talk about "Follow your dreams and you never know where you'll end up!" Br. Bob is the curator of meteorites at the Vatican Observatory Museum in Rome - Br. Guy's old position. He started playing with [Blender](#) and 3D printing, and has become quite the pro! Blender is a free/open source 3D modeling and animation app (it's just amazing) - it also supports output to 3D printers - which Br. Bob has put to amazingly good use!

He started by printing a [scale model](#) of St. Ignatius Church in Rome from the mid-19th century when [Fr. Angelo Secchi's](#) astronomical observatory was on its roof - the detail is amazing!



He used his skills at 3D design, and knowledge of non-invasive density measurements with the Vatican meteorite collection to design and 3D print an [Ideal-Gas Pycnometer](#) for OSIRIS-REx - which is now installed at the Johnson Space Center - and he'll be using.

Unfortunately, just knowing Br. Bob won't get me that tiny bit of asteroid in Lucite I so desperately want...

Universe Sandbox

[Universe Sandbox](#) is a 3D physics simulator app for Windows, Mac, and Linux. Arguably, one of the most popular things to do with the app is collisions - such as lobbing the Moon at the Earth, and watching the blast wavefront travel across the globe, as impact fragments are thrown far and wide, only to plummet back towards the Earth, creating secondary impact sites, heating the planet up to near incandescence.... Muah Ha hahahahaha! For some reason the kids always love it when I show them this at astronomy events!

The app is *constantly* getting updated, and for the past several years, there has been a banner at the top advertising positions for planetary astronomers. I remember seeing a development [blog post from 2019](#) about them working on 'smoothed-particle hydrodynamics' for collisions (which looked VERY cool), but I've not seen anything since.

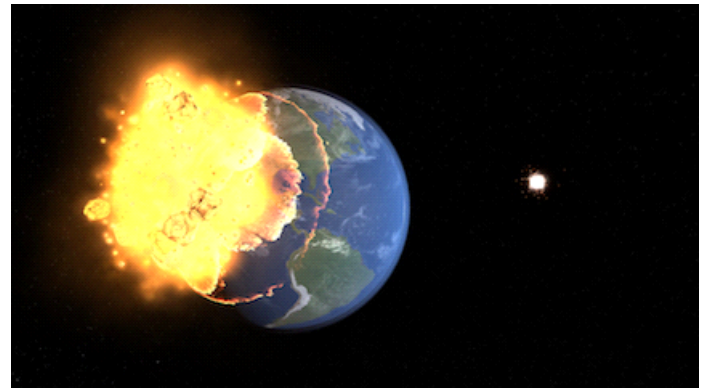


Image: Earth getting clobbered in Universe Sandbox

However, the most [recent development update](#) had my jaw hitting the floor - they've added a new composition system, with eight new materials, including oxygen, methane, iron, silicate and water. This new system allows you to realistically simulate planet surfaces and atmospheres, and accurately terraform planets.

One of the most impressive things added was material phases: "all new materials can exist inside of, on the surface of, or in the atmosphere of a planet. A material's phase will be simulated based on its temperature and pressure using something called a [phase diagram](#)."

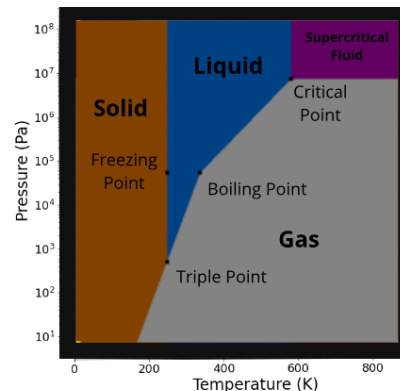


Image: phase diagram for water in Universe Sandbox

Phase diagrams in the app show a material's state at different temperatures and pressures, and are based on real-life data. Another addition is simulating planetary interiors, where extreme conditions affect a material's phase, density and volume.

At this point, I have to wonder if Universe Sandbox has graduated from 'Cool Toy' to a useful research tool!

Bob Trembley,
President



WARREN ASTRONOMICAL SOCIETY ANNUAL ELECTION OF OFFICERS OF EXECUTIVE BOARD MONDAY, NOVEMBER 6, 2023 @ 7 PM

Fellow members of the Warren Astronomical Society,

The Annual Election of Officers of the Executive Board will take place on Monday, November 6th, 2023, at 7 PM. At this time, we have candidates for the offices of President, 1st Vice President, 2nd Vice President, and Outreach Chairperson. Due to term limits per the bylaws of the Warren Astronomical Society, we have vacancies (and no candidates) for the offices of Secretary, Treasurer, and Publications Chair. The responsibilities of the vacant offices can be found on the Warren Astronomical website (<https://www.warrenastro.org>) – go to “Who We Are” link and by laws can be found there.

Please consider running for one of these positions – if there are any questions one may have regarding the positions, please contact any of our current board members for information of that particular office you may be interested in. The term of office is for one year, and one cannot occupy the position for more than three consecutive terms.

After emerging from the pandemic, meeting virtually only, we now find ourselves conducting our meetings both in person and via Zoom. It is our hope that members will consider becoming an officer on the board for the 2024 calendar year, and keep the WAS going strong into its 63rd year of existence.

Any questions in regard to any of these positions or the election in general, please feel free to contact me at: secretary@warrenastro.org

or any of our current board officers.

**Mark Kedzior
Secretary, WAS
Nominating Committee Chairperson**



Kalamazoo Astronomical Society

Looking Up Since 1936

October 4, 2023

Dear Fellow Astronomy Club:

Anticipation is building for the *Great North American Eclipse* on April 8, 2024! The Kalamazoo Astronomical Society would like to help build excitement for this much anticipated event by inviting your members to its "Eclipse Series," special presentations and workshops to be held during its regularly scheduled activities between November 2023 and March 2024. There is absolutely no charge to attend. This series is being funded through a generous grant from the Irving S. Gilmore Foundation.

The flyer included with this letter outlines the schedule for the entire series. All of our presenters are world-renowned eclipse chasers and authors who are highly regarded for their expertise in eclipse predictions, photography, or cartography. Everyone will enjoy the talks by Jay Anderson, Fred Espenak, Tyler Nordgren, and Michael Zeiler. Astrophotographers will not want to miss the two-part workshop on taking and processing eclipse images by Alan Dyer. Fred Bruenjes and Xavier Jubier, the creators of *Eclipse Orchestrator* and *Solar Eclipse Maestro*, will show you how to automate your eclipse imaging.

Full details on each presentation and its speaker can be found on a special web page on our website:

<https://www.kasonline.org/eclipse.html>

All presentations will be live-streamed on Zoom (registration is required). Four installments will also be held at our regular meeting site, the Kalamazoo Area Math & Science Center, so you're welcome to attend in person if you live near southwest Michigan (especially in January and February when Jay Anderson and Michael Zeiler appear live).

Clear skies, and I hope you can join us!

A handwritten signature in black ink that reads "Richard S. Bell". The signature is written in a cursive, flowing style.

Richard S. Bell
KAS President



The KAS is a 501(c)(3) non-profit organization whose purpose is to promote the exchange of information among those with a common interest in all areas of astronomy, to educate the public about astronomical discoveries and events, and to cooperate with other amateur and professional astronomical organizations.

c/o KAMSC • 600 West Vine, Suite 400 • Kalamazoo, MI 49008 • kasonline.org

Kalamazoo Astronomical Society's **ECLIPSE** SERIES

Get ready for the April 8, 2024 Great North American Eclipse!



November 3rd @ 7:00 pm ET | KAMSC & Zoom

Sun Moon Earth: Solar Eclipses from Omens to Awe

presented via Zoom by **Dr. Tyler Nordgren**



November 17th @ 8:00 pm ET | Zoom Only

Part One: How to Photograph the Eclipse

presented by **Alan Dyer**



December 15th @ 8:00 pm ET | Zoom Only

Part Two: How to Process Eclipse Images

presented by **Alan Dyer**



January 12th @ 7:00 pm ET | KAMSC & Zoom

Moonshadow Madness and Eclipse Journeys

presented by **Jay Anderson**



January 19th @ 8:00 pm ET | Zoom Only

Automated Imaging of the 2024 Eclipse

presented by **Fred Bruenjes & Xavier Jubier**



February 2nd @ 7:00 pm ET | KAMSC & Zoom

A Tour of the April 8, 2024 Total Solar Eclipse

presented by **Michael Zeiler**



March 1st @ 7:00 pm ET | KAMSC & Zoom

Experiencing Totality - The Great Eclipse of 2024

presented via Zoom by **"Mr. Eclipse" Fred Espenak**

Warren Astronomical Society Annual Awards Banquet

Monday, December 11th, 2023

from 6PM to 11PM.

Ukrainian Cultural Center

26601 Ryan Road

Warren, MI

Prices

By December 4th (Cranbrook meeting): \$35.00.

At the door: \$40.00.

Cash Bar

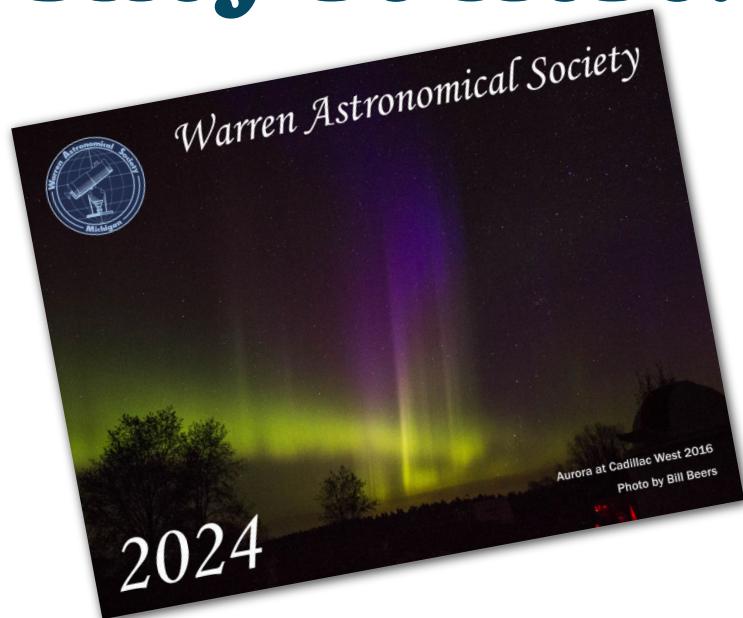
Dinner will consist of three entree selections, two fresh vegetable selections, two potato selections, assorted cold salads, a pasta side, fresh rolls and butter, soft drinks/coffee, and cheesecake with strawberry topping.

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)

They're Here!



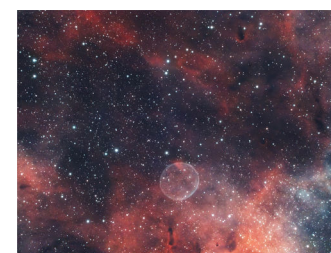
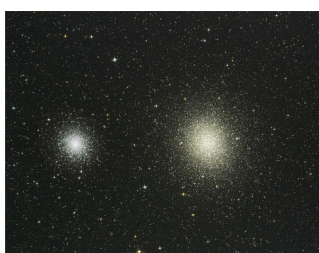
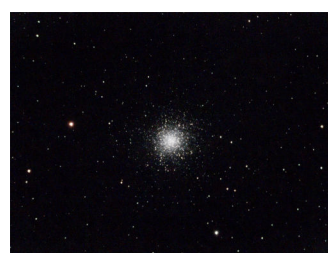
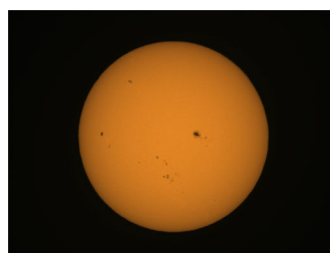
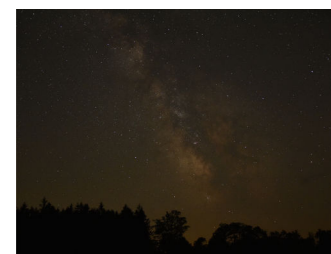
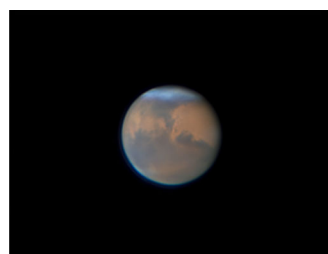
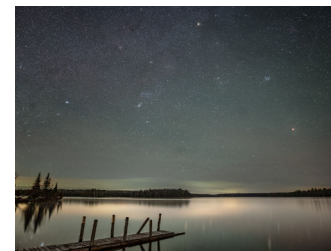
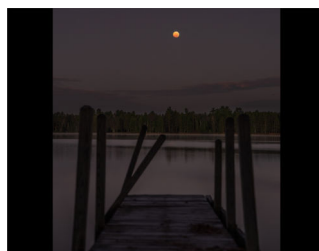
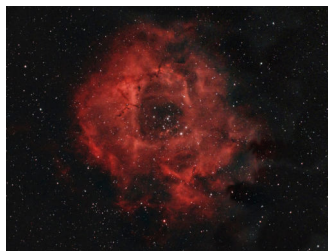
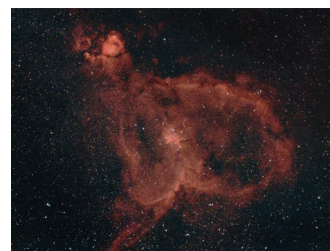
Want to keep track of W.A.S. meetings and exciting astronomical events next year?

**Order your 2024
Warren Astronomical Society calendar
now!**

These beautiful calendars feature W.A.S. member astrophotography photos, including:

- Bob Berta - Heart Nebula
- Bob Berta - Rosette Nebula
- Adrian Bradley - Moon Over the Dock
- Adrian Bradley - Orion Over the Lake
- Ken Heilig - Ken Doing Outreach with His Vintage Telescope
- Dale Hollenbaugh - Mars
- Dale Hollenbaugh - Messier 31- the Andromeda Galaxy
- Steven Tennenberg - Milky Way from Cherry Springs State Park, PA
- Steven Tennenberg - Sun Spots
- Steven Tennenberg - Messier 13
- Bill Beers - Messier 13 and Omega Centauri Comparison from the Texas Star Party
- Bill Beers - Soap Bubble Planetary Nebula

And the Aurora over Cadillac West by Bill Beers on the cover.





Observation Reports

1 - 2 October

Jupiter and variable stars in Ori. Giant Planet immediately past lunar conjunction @ 3 deg. With turbidity, appearance of satellites skewed. Callisto the "blue" moon not blue, but so bright mistaken for Ganymede at western elongation. Ganymede so close to W. limb, mistaken for Io! Great Red Spot on Central Meridian but initially difficult, reduced dimension and colour: orange-pink. S. Aequatorial Belt at least this hemisphere more subdued than the N. E. B.. Hint of South Temperate belt above Spot and a northern "hood" over much of that hemisphere. Pi Arietis due north of Jupiter in field ca. 09.00 U.T. Moon made Orion stars a challenge, and CZ (eruptive) nearly useless obs'n.

Transparency poor + Moon. Seeing fair.

4" f/10 refractor and 16" S-C Borr II, 185X, 50X, 145X

8 October

The Sun. Three groups, two de minimis. Of those, one Waldmeier "A", essentially a "pore". Only real activity on photosphere: N. hemis., leaving, "C", extensive but not well populated. Old Cycle?

Transparency good, seeing poor.

Instrumentation as before.

.....

COMMENTARY: So little activity at this stage of Activity Cycle 25.

9 October

The Sun. Two groups. Afore-mentioned group approaching west limb has blossomed to Waldmeier "D". Group near centre of disc is a "B" with many small-tiny members.

Seeing poor from wind.

Instrumentation as before.

14 October

Solar eclipse. Os'd ~ 17.35 - 17.45 U.T. from Grand Rapids. Intermittent appearance. Large "bite" from southern limb.

Transparency poor with fast intermittent clouds from E. ranging from completely opaque to very bright lacunae.

Naked eye unfiltered.

24 October

The Sun. Two groups, one N. and one S. Both Waldmeier "A" with one spot a-piece.

Transparency poor from haze and clouds.

Instrumentation as before.

.....

COMMENTARY: Difficult to believe the paucity of photosphere activity in this stage of Activity Cycle.



Letter

In re the contributions of Scholars Ahmad and Hill. *Seriatim*:

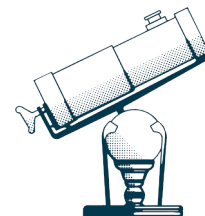
I did not know an asterisk (*) was added to the letter designations of radio sources, but given my readings, the change was very recent (1982). As the Rabbi says in *Fiddler*, "If you want to give me bad news, tell me about the Flood". Since last year I have been meaning to show people the very, very centre of the Galaxy. It is marked on the "pocket" atlas given by my former hero Bill Beers. The skies at the Observatory have been so wretched, at least on the public nights I attended, that it was a doomed business.

In a 1961 issue of *Sky and Telescope* (the W.A.S.P. of its day) that I first encountered a deep sky object with a letter, Cassiopeia A. Wow! -- radio source in the Queen, unknown until the 1940's from a super-nova estimated (then) to be 300 years old. I tried to read the article twice, but . . . failed. It awaits in the Veen library.

That same issue featured an atmospheric cover picture, in good old b&w, of a crescent Moon over an observatory. Enter the Moon picture of the virtuoso Hill, the Jesus to my John the Baptist. One of my own lunar "resources" is a centre-fold from Sky Publishing, reproduced from a 1960's *S&T. Mappa Selenographica*, 1926, Karel Andel, reduced from the history making all-Moon map by Madler in the 1830's. So, armed with too much coffee, I expanded the 3+ day crescent he submitted, and used his commentary to match the two images. NOT easy. Hill made a field picture. Selenographica reproduction is an air-brushed condensation of a far larger at-telescope map. (Madler and workers additionally measured hundreds of terrain elevations!) This is not the forum to relate detail on what was matched, or what not. One notes a lesson for field science, in that a captured moment might be difficult to put next to a standard reference, because the latter is a compilation or even generalisation. "Keying out" in botany is a good analogy. I did all this so you will not have to.

Thanks to Handsome Joe for add'l scholarship on Madler.

G. M. ROSS,
"all things to all men".



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
- Black background with yellow lettering and blue artwork
- Choose when placing order

CREW NECK SWEATSHIRT W/ FRONT HAND POCKET ("HOODLESS HOODIE")

Black - Navy - Gray - one imprint

XS - XL	\$29.00
2XL	\$32.00
3XL	\$36.00

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

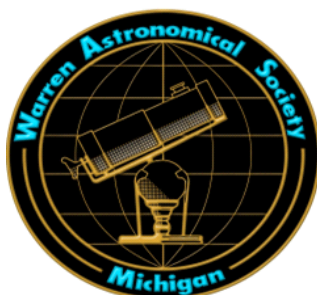
HOW TO ORDER:

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



Teal/Yellow



Gold/Blue



Gold-3D



WAS Eclipse photos

From Gerald Persha on the October 14 solar eclipse

"Pics were taken with my 80mm ED refractor, 0.8X field flattener/reducer, and ASI178MC camera. Stack of 50 frames and with no additional processing except for extract color to get rid of the blue cast commonly associated with Mylar solar filters and resize from the original 3088 x 2072 pixels. Conditions were not ideal here in La Luz, NM with very thin cirrus obscuring the sun throughout the eclipse."



Image: Gerald Persha



Image: Gerald Persha

From Adrian Bradley

"I wanted to get some part of this eclipse, even if it was partial. So I looked at a cloud forecast using the website at SpotWX.com and Astrospheric. Both showed lighter cloud cover near the tip of the thumb. So, 2 hours and 45 minutes later, I got to a point where there was a clearing in the sky, and eclipse time was drawing near."

Meanwhile, a friend of mine named Azhar Bokhari happened to be in the path of annularity and snapped this pic with his iPhone 15. Bravo to Azhar!! Even though we weren't going to see this, it was still a successful adventure and great dress rehearsal for the eclipse in April, 2024!!

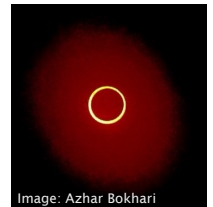


Image: Azhar Bokhari



Image: Adrian Bradley



Image: Adrian Bradley



Image: Doug Bock

And...from Doug Bock:
"My picture of mid eclipse."

Betelgeuse

By Tab Ahmad

Betelgeuse, also called Alpha Orionis, is the second brightest star in the constellation Orion, marking the eastern shoulder of the hunter which is a winter constellation in the northern hemisphere. Its name is derived from the Arabic term *bat al-jawzā*, which means “the giant’s shoulder.” Betelgeuse is one of the most luminous stars in the night sky. It is a variable star and usually has an apparent magnitude of about 0.6. However, in late 2019 it began dimming. By early 2020, it had reached an apparent magnitude of 1.6 and returned to its original brightness. This “Great Dimming” was caused by a giant ejection of gas that condensed into dust when it cooled. Betelgeuse is easily discernible to even the casual observer, not only because of its brightness and position in the brilliant constellation of Orion but also because of its deep reddish color.

Betelgeuse is a red super-giant star roughly 764 times as large as the Sun. For comparison, the diameter of Mars’s orbit around the Sun is 328 times the Sun’s diameter. Infrared studies from spacecraft have revealed that Betelgeuse is surrounded by immense shells of material evidently shed by the star during episodes of mass loss over the past 100,000 years. The largest of these shells has a radius of nearly 7.5 light-years. It weighs in at 16.5 solar masses. If we replaced our Sun with Betelgeuse, it would stretch past Jupiter’s orbit. The star has the widest range of varying magnitude out of any first magnitude star. Best estimates show that Betelgeuse will go Supernova within the next 100,000 years.

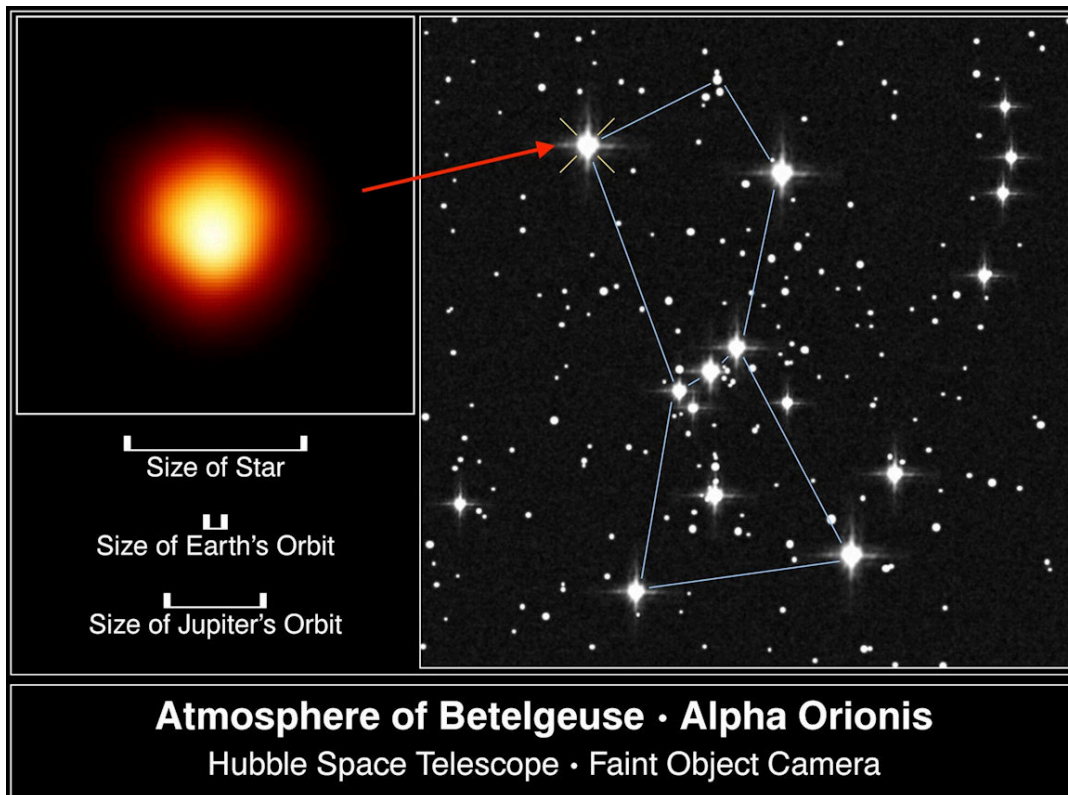


Image courtesy NASA/ESA

The View From C.W. Sirius Observatory

LBN 777 – The Baby Eagle Nebula

LBN 777, which stands for Lynds Bright Nebula, is a very faint reflection nebula located 400 light-years away in the constellation Taurus. LBN 777, which resembles an eagle head, is a portion of the large cloud of dust and gas known as the Taurus Molecular Cloud. The brownish color is caused by large dust grains embedded in the gas. The dust reflects the light of the stars inside and near the nebula. Beverly Lynds included this one in her catalog of bright nebula in 1965. The dark area in the eye of the eagle is known as Barnard 207. Beverly Turner Lynds is an American astronomer who cataloged thousands of bright and dark nebula objects using the Palomar film plates. Since this object is so faint, the only way to see it is by using long exposure photography. I took this image through the 11" SCT telescope using the ZWO2600 one-shot color camera. This is compiled of 17, 10 minute exposures for almost 4 hours of total integration time. I have always been a fan of Beverly Lynds bright and dark objects in her catalog, because they are rarely observed.



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



From the Desk of the Northern Cross Observatory



This past month (October 2023) the weather had been cloudy. But on the night of October 22, 2023 it was clear enough to do some imaging. Working on M 74 in the evening into the early morning hours, and then on Comet 103p/Hartley starting around 4:00am.

Messier 74 is a large spiral galaxy in the equatorial constellation Pisces. It is about 32 million light-years away from Earth. The galaxy contains two clearly defined spiral arms and is therefore used as an archetypal example of a grand design spiral galaxy.

10" f/8 RC, ZWO asi2600mc pro camera, gain 100, temp 0C. 53 x 5 minute light frames, 24 darks, 50 flats.



Comet Hartley 2, designated as 103P/Hartley by the Minor Planet Center, is a small periodic comet with an orbital period of 6.48 years. It was discovered by Malcolm Hartley in 1986 at the Schmidt Telescope Unit, Siding Spring Observatory, Australia. Its diameter is estimated to be 1.2 to 1.6 kilometers.

This was a morning object this month.

10" f/8 RC, ZWO asi2600mc pro camera, gain 100, temp 0C. 43 x 2 minute light frames, 24 darks, 50 flats.

Stacked on the comet core in PixInsight. The star trails give you an idea of how much it moved in 2 hours.

-Doug Bock

Presentations

Cranbrook November 6, 2023

Main Talk

Mercury Before *Mariner X*

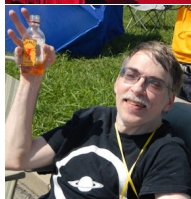
By Gary Ross with Clayton V. Carey

Mercury was a scientific "problem" since early antiquity. From faulty cosmological models to difficulties in field work, the first planet eluded well equipped experts improbably to the 1960's. Proximity does not mean a soft target. With no reasonable access to source literature, the presenters conduct a secondary review of Mercury research, with commentary on the difficulties for those in the scientific enterprise. Cognitive dissonance was a factor, contrary to text-book scientific method. The lecture complies with the Beers Doctrine, to wit, Real Astronomy. Quantum physics, theory of relativity, multi-verses, dark matter/energy, Big Bang will not be mentioned.

About the Presenters

Gary Ross: Inspired by Larry F. Kalinowski, first attended a Society meeting, 1962. Refused to join for years, but past president. Greatest Observer in Michigan (decree of William B. Beers)

Clayton Carey: Joined Grand Rapids Assn. with no particular interest in astronomy, but to associate "with intelligent people", results still uncertain. With the break-neck Bullerman expedition to 2017 solar eclipse in Kentucky. Early experimenter with "P.C.s", hence the Man of a Hundred Hard Drives (on the floors of his bedrooms)..



WAS 2024 Board Elections

Officiated by Mark Kedzior

Nominees

President: Bob Trembley

1st VP: Dale Partin

2nd VP: Riyad Matti

Treasurer:

Secretary:

Outreach:.....Jeff MacLeod

Publications:

Macomb November 16, 2023

Feature

Gemini Capsule Simulator

By Jeff MacLeod

The Gemini Simulator is a transportable space-camp experience for the young and old alike. In this presentation Jeff will go over some history of the real Gemini spacecraft and reminisce about the construction of his Gemini Simulator. This talk is the how and why it came to be and some plans for the future.

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.



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.



Skyward



David H. Levy

As a youngster growing up in Montreal, Canada in the early 1950s, I was impressed by the seeming simplicity of Montreal's weather. It appeared to me as though there were just two kinds of weather, in wintertime a grey sky, and in summertime a blue sky. I wasn't completely wrong about this. In 1961, while trying to run a small astronomy club for young people, I counted an unbroken string of cloudy Friday nights that lasted for months. And sure enough, when the weather began to moderate the following spring, we were treated to, at last, a clear night.

As I grew older, my thoughts turned to finding a different locale where the sky would be clear more often. In September 1979, I packed my bags and telescopes and headed for the American southwest. I was rewarded immediately. My first season here, the Autumn of 1979, was punctuated by a virtually unbroken string of more than 50 clear nights in a row.

There was a specific reason for my wanting more clear nights. In the fall of 1965, I was planning a search program for comets, and it began on December 17 of that year, just before midnight. I used the largest telescope I had at the time, the 8-inch reflector named Pegasus. Less than a year later, Miss Isabel K. Williamson, director of observations of the Royal Astronomical Society of Canada's Montreal Centre, wrote this in the November 1966 issue of the center's newsletter *Skyward*: "The increase in the number of observations over the previous year can be attributed to David Levy who has made the search for and observation of comets and novae his main astronomical project. In addition to patrolling assigned areas, he has made a total of 360 observations of the dome, the twilight horizon and the sky in the sun's vicinity, and on 33 nights spent a total of 48 hours at the eyepiece of his telescope, sweeping the sky for comets."

Miss Williamson's words from all those years ago remain among the highest compliment I have received from anyone. And I still use Pegasus for some of my comet hunting, including the evening of October 11, 1987, when I used Pegasus to find my third comet, 1987 T1. In fact, to celebrate the completion of this article, I went outdoors and used Pegasus for a short comet search this very evening.

I may have been right about my childhood weather forecast. Southern Arizona offers many more clear nights than one can appreciate from the frequently cloudy sky over Montreal, Canada. And from the Chiricua

Astronomy Complex, a two-hour drive southeast of my Vail, Arizona home, observers are treated to one of the darkest sky locations in the world. It is well worth loading Pegasus into a van and using it at that wonderful CAC dark site. Whether I am down there or right here, placing my eye at the eyepiece of this beloved telescope warms my heart and pierces my soul.



Pegasus, Fall of 2023



Moonshadow

By Brad Young, Astronomy Club of Tulsa

A Question

So, my Dad asked me a question, "How long will it take before the entire Earth has been under the shadow of the Moon?" With the October 14 annular eclipse coming up, it seemed like a great subject for an article. As I got deeper into it and found the complexity of the solution, I decided he must have wanted to get me back for something I did as a kid.

Scope of Coverage

*There is no dark side in the moon, really
Matter of fact, it's all dark*

"Eclipse" by George Roger Waters

We decided not to include hybrid or annular eclipses. Annular "shadow" is a nice thing to experience, but it is ultimately a central partial eclipse and does not have the same appeal or effect of a total eclipse. Hybrid eclipses do include a total component, but these are always total for a short time, at the ends of the track. The duration during the total phase is also short, so these events are therefore difficult both to observe and estimate for this study.

You must then decide the area of coverage included in the problem. At most eclipses, much of the track is out over open ocean, and may not be seen by anyone. However, to be fair to sailors and albatrosses, we decided to look at the entire surface of the Earth.

The Moon is Leaving Us Behind

Another quirk would be if there were no total solar eclipses (TSEs) to be had. Because the Earth's spin is faster than the Moon's orbit, the tidal bulge raised on the Earth pulls on the lagging moon, gradually raising its orbit and slowing our day. Every year the Moon's orbit grows by some 3.8 centimeters and our day lengthens by about 0.000015 seconds.

At this present rate, in about 50 million years the Moon will never completely eclipse the Sun, it will simply appear too small on the sky. So, our attempt to shadow everywhere must happen within 50 million years.

Area of the Shadow

*Then you flew your Lear jet up to Nova Scotia
To see the total eclipse of the sun*

"You're So Vain" by Carly E. Simon

Now things get interesting, and a lot of it must be estimated or use average values. The width of the eclipse track of a TSE on Earth is at most 267 km. Of course, it can be much less, down to 0, so the average would be 134 km. Another consideration is that the duration is variable across the width of the track, but we will stipulate that an eclipse of any length counts as coverage.

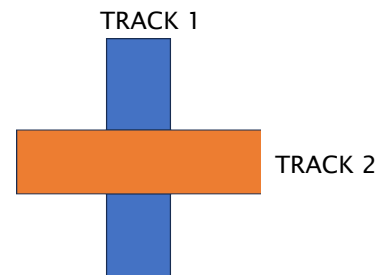
The length of the track is tricky; you may have noticed that some are very short at the poles (but are often wide) while those near the equator may span most of that side of the

globe. According to my source, typically, the path of a TSE across the globe is around 15,000 km long. So, this would give us an area of each track of about 2,000,000 km²

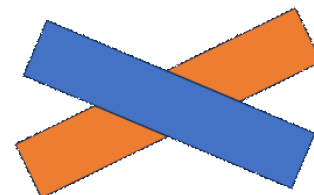
Geographic Likelihood

The average number of TSEs in a century is 66 for Earth as a whole. On average, the same location on Earth only gets to see a solar eclipse for a few minutes about every 375 years! This means that about 248 TSE occur before any spot is revisited.

Now, the definition of this "location" is not given by the source but is crucial. We know how much area is covered by each track, on average, but every 375 years, shadow is wasted covering the same spot again. If two tracks cross at right angles, then the overlap would be one track width:



However, this perfect intersection is rare; normally, the tracks will cross at an angle, resulting in a larger area of "wasted" overlap:



So, to approximate to the worst case, I decided to use the area of 2 times the width of an average track (2 x 134 km) as the location revisited. This results in 72,000 km² wasted each time. So, each 375 years, 2,000,000 - 72,000 square kilometers are covered by shadow. This calculates out to 5,170 km² per year in shadow, on average.

Results

*Ain't no sunshine when she's gone
Only darkness every day*

"Ain't No Sunshine When She's Gone" by Bill Withers

The area of the entire surface of the Earth, including the oceans, is an astounding 509,600,000 km². Using the criteria discussed above, it takes approximately 100,000 years for the moon shadow to visit every point on Earth. Of course, this is just an average solution - the vagaries of the different eclipse circumstances and tracks may not lead to a cycle exactly this long every time. But the cycle is long enough to ensure that it does happen and will many more times before TSEs stop altogether with the recession of the moon.



A montage of author's images from the last annular eclipse that ran along a very similar path in 2012. Clockwise from upper left, wife Harriet's sketch of the advancing of the moon, the odd appearance of distant mountains and shadows, Crescent sun through a pinhole, son Gus and I observing safely, maximum annularity, Another crescent view with car window reflection. Of course, all of these were much clearer with our own eyes.

Eclipse Challenges Upgraded to Include Pins

The Astronomical League has upgraded the Solar Eclipse Observing Challenges to include the same certificate (Silver Level) and pin (Gold Level) as is used with all their Observing Programs. In case you missed an earlier article, the challenges consist of the requirements listed below.

Solar Eclipse Observing Challenge – Annular Eclipse

An annular eclipse of the sun is a magnificent event in the natural world. It allows you to experience the three-dimensional nature of the universe—events occurring in the cosmos can be experienced directly on Earth. During a total eclipse of the Sun, the Sun, the Moon, and the Earth are all in perfect alignment. The scale is unimaginable, yet here it is happening right on top of you and around you. Only a total eclipse is more amazing. If the Moon had been a little closer to the Earth or the Earth a little further from the Sun, this time, it would have been total, but instead we are treated to the “Ring of Fire” as the outer edge of the Sun remains visible throughout the event.

After what seems like a moment, the moon continues its journey and the annular eclipse is over, marking the end of the ring. It is then you ask, “When is the next one?”

*** WARNING ***

Before you start any solar observing program, make absolutely certain that you have safe filters and a safe set-up. Only use filters from reputable sources, and never use a “solar filter” that screws into an eyepiece. As Richard Hill states in *Observe and Understand the Sun*: “Observing the sun is the only inherently dangerous observing an amateur astronomer can do. Be always aware of this and take all necessary precautions. If you do not know if a filter or procedure is safe, then do not use it! Always err on the side of safety. An eye once damaged is forever damaged. Filters that let too much INFRARED light through can burn an eye if used visually. There is NO PAIN when this happens. Burned retinas can not be repaired. Excessive ULTRAVIOLET light has been shown to cause cataracts. So be very careful.”

For more information on ways to safely observe the sun, click [here](#).

The Awards

The program offers two levels of accomplishment (certifications):

SILVER – a certificate of completion will be awarded

Successful submittal will require completion of the [Annular Eclipse Experiences Checklist](#).

- Observe the eclipse directly using your eyes or equipment and report the four contact times, and a detailed description of each phase of the eclipse. Remote imaging is allowed.
- If you cannot travel to the eclipse, observe the partial phase that you can see, and report as much data and description as circumstances allow. In addition, you must use images acquired via the internet and report the timings as seen at that location, along the line of annularity, of all four contacts. The substituted images must be submitted and be from a source that can be verified by the administrator. The event must be annular at that location (allowing for all four contact points

to be reported). This method may also be used if you are clouded out at your location, even if you traveled to view the eclipse.

GOLD – a certificate of completion and pin will be awarded.

Successful submittal will require completion of the silver level award described above and calculation of the Saros period via the process described in “[Determining the Saros](#)”. Include with the submittal all moon positions, sketches and images used, and the calculations involved to determine your answer.



Determining the Saros requires a minimum time-span of six (6) months (a longer span is preferred). During that time, a minimum of four (4) moon positions each month, for a minimum of 24 total positions will be needed to accomplish the task. Again, more will lead to greater accuracy. The moon positions can be done before or after the eclipse.

Other Awards

There is also an “I Observed the Eclipse” downloadable certificate available [here](#) that may be distributed to anyone attending an observing event.

Requirements and Rules

You do not need to be a member of the Astronomical League to participate in this challenge.

The observer should report all of the following information with submittal:

1. Location of the observer’s site, including longitude and latitude*
2. Date and time of the observations (either UT or local time) *
3. Instrument used with aperture and focal length of the telescope and binocular specifications (or state that naked eyes were used [all with proper filter!])
4. Eyepiece and magnification as it applies
5. Filters used (eye protection solar filters are assumed)
6. A detailed description of each phase of the annular eclipse*
7. Reticle devices used for measuring solar features as it applies
8. Imaging equipment as it applies

*completion of the required Experiences Checklist will satisfy these requirements

Submitting for Certification

This Observing Challenge has a deadline for submission: (deadline for submission: June 30, 2024)

Observers should submit their observing logs and images along with name, mailing address, phone number, email address, club affiliation, and to whom the certification should be sent, to the League’s Solar Eclipse Observing Program Coordinator (the author) either by mail or e-mail (preferred). Only copies of your log and images should be sent; originals will not be returned.

Images in electronic format may be forwarded by any convenient means that accomplishes transfer or makes the images available for review. This may include posting the images on the web.

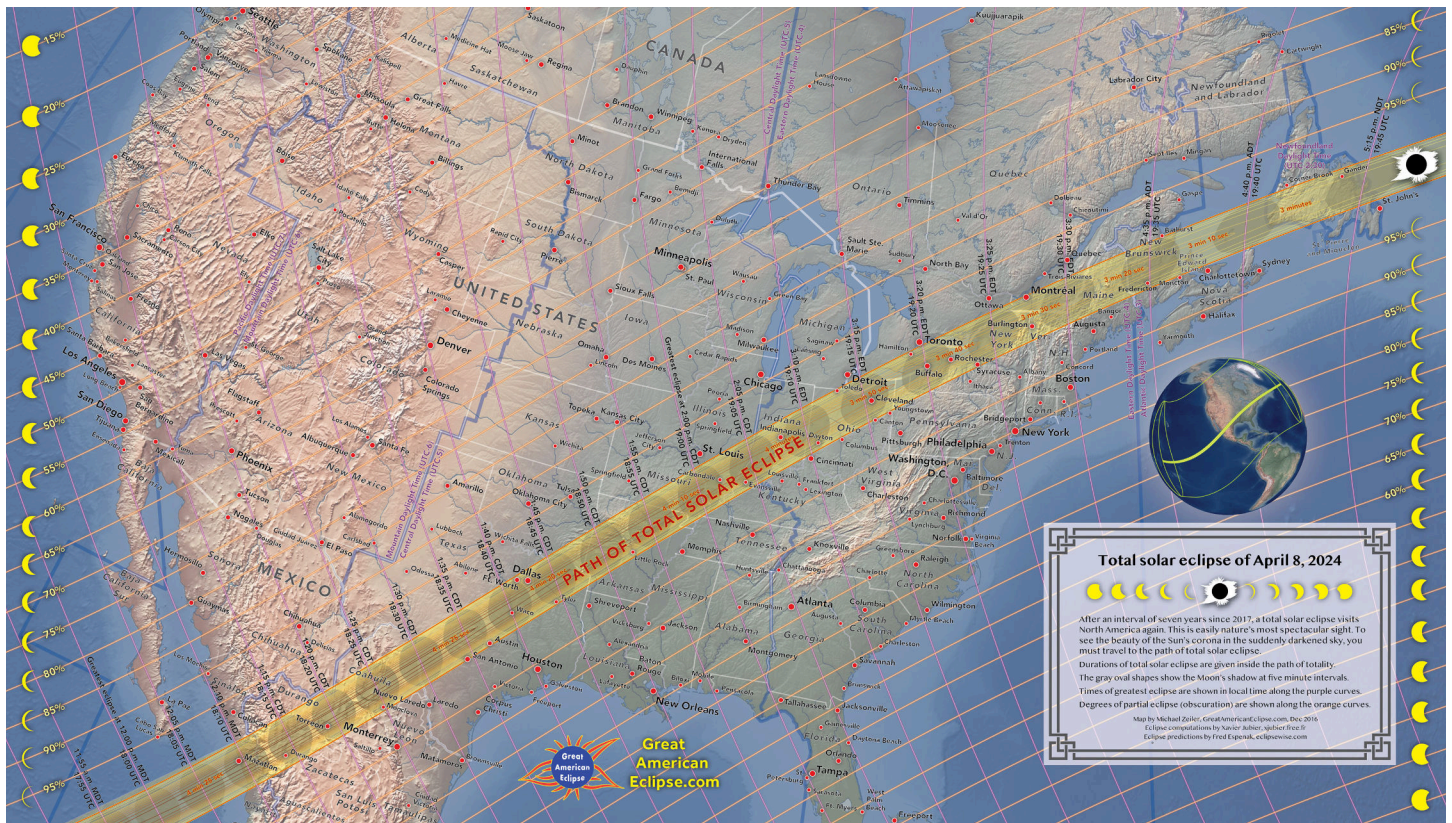
Certificates and pins will be emailed to the email address provided, either to the observer or to a society officer for presentation at a society event.

It is hoped that this observing challenge will whet your appetite for observing additional eclipses.

Stay tuned for the Total Solar Eclipse Challenge in 2024.

My contact is allenb_young@yahoo.com and website is haf-snt.com.

Image below from <https://www.greatamericaneclipse.com/april-8-2024>.



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.

Also:

- Participate in the Observing Program
- Avail yourself of the League Store
- Astronomy Books at a discount
- Attend Astronomical League Conventions



Only \$7.50 annually,
(Membership starts July 1)

alcor@warrenastro.org



Over the Moon

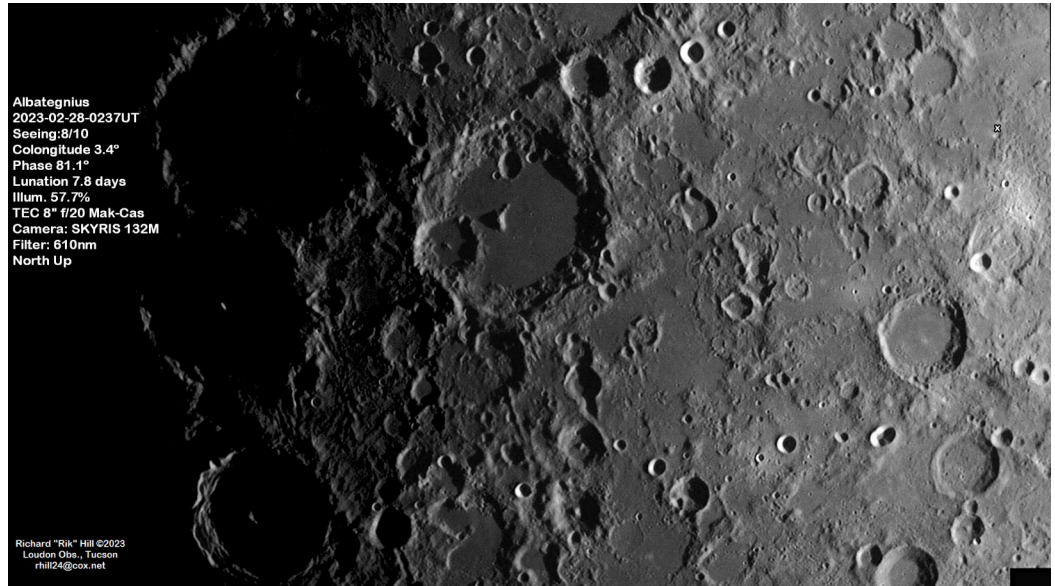


with Rik Hill

Albategnius

The large flat floored crater just above center is Albategnius (dia. 139km) with the crater Klein (46km) on its west (left) wall. In the upper left of this image is the great walled plain Ptolemaeus (158km) with Alphonsus (121km) below its central peak catching the first rays of the morning sunlight. Below that is Arzachel (100km) with its central peak likewise just seeing sunrise. South of Albategnius is a curious feature that looks like two craters with a north-south trough running through them. Actually, it is the merged alignment of four craters. The largest crater is Vogel (26km) with Vogel B (21km) just above and Vogel A (9km) above that. Below Vogel B is the last member of this alignment, an unnamed and badly eroded crater some 10-12 km in diameter. These separate features can only be seen clearly during higher illuminations.

Note the large scratch marks that run diagonally from upper left to lower right in this image. These are "scratches" carved by city sized ejecta boulders from the Imbrium impact to the north. In the upper right corner you can see a small "x" that marks the Apollo 16 landing site and below it a whitish area that is one of the enigmatic magnetic 'lunar swirls' on the north edge of the ruined crater Descartes. Just below the 'x' is a tiny white spot. This is "South Ray" a very small bright rayed crater only 0.6km in diameter. The crater is hard to see but you should be able to pick out the bright spot and find the landing site. There are sites on the web that have close up images of all the Apollo landing sites so you can use

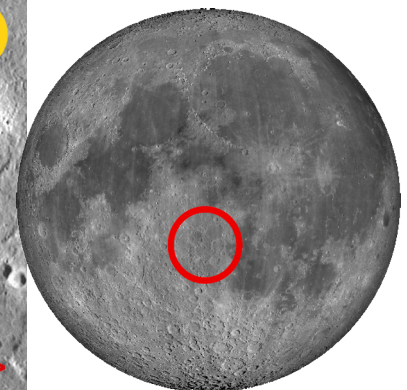
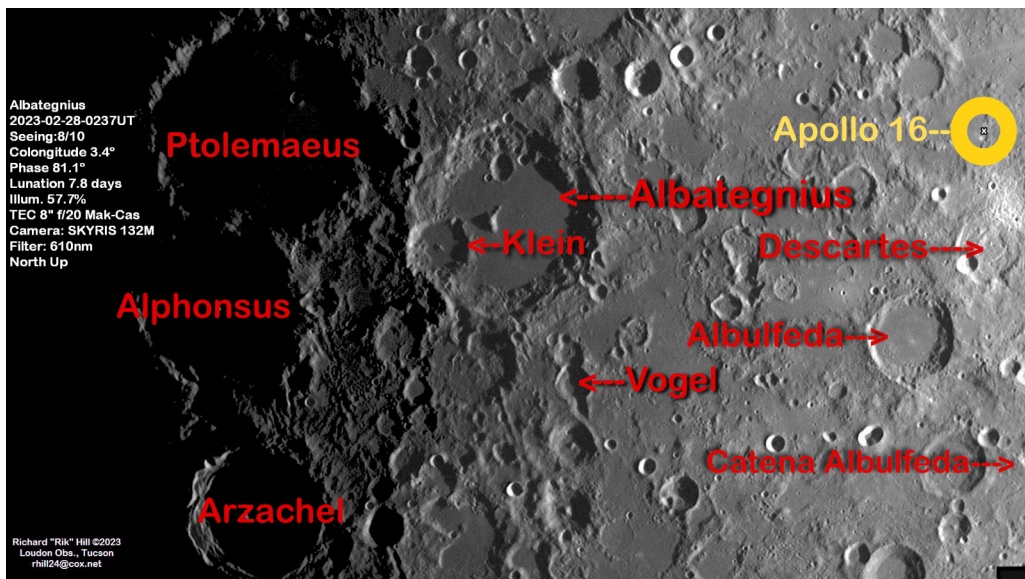


these images at your telescope to find these features.

Further south is a fair sized flat floored crater Abulfeda (62km) with a long string of craterlets tangent to the south wall. This kind of feature is called a "catena" and this one is Catena Abulfeda that runs over 200km across these lunar highlands.

There is so much more to talk about in just this single image but I'm not writing a book here!

This image was made from parts of 4, 1800 frame AVIs stacked with AVIStack 2 (IDL) and knitted together with Microsoft ICE. Final processing was done with GIMP and IrfanView.



Location Maps by Ralph DeCew

History S.I.G.



November 1993

In this issue we reprinted (with permission, no less!) "Refractors vs. Reflectors: A Brief Optical Analysis" by Tom Ryan, from the Low Browns' newsletter Reflections. "Computer Chatter" by Larry Kalinowski follows, and, after a NASA report, we get "Autumn Objects" by Marty Kunz for nighttime targets.

November 2003

For a very long stretch, "Astro Chatter" by Larry F. Kalinowski has led the article parade in the WASP issues and this was no exception. It is lengthy, featuring the lunar eclipse November 8, 2003. "The Swapshop" completes Larry's contribution to the WASP. Then we put on our thinking caps (or whip out our calculators) for "Take It With a Grain of Salt" By Guy Maxim (comparing number of stars with grains of sand in the Earth.

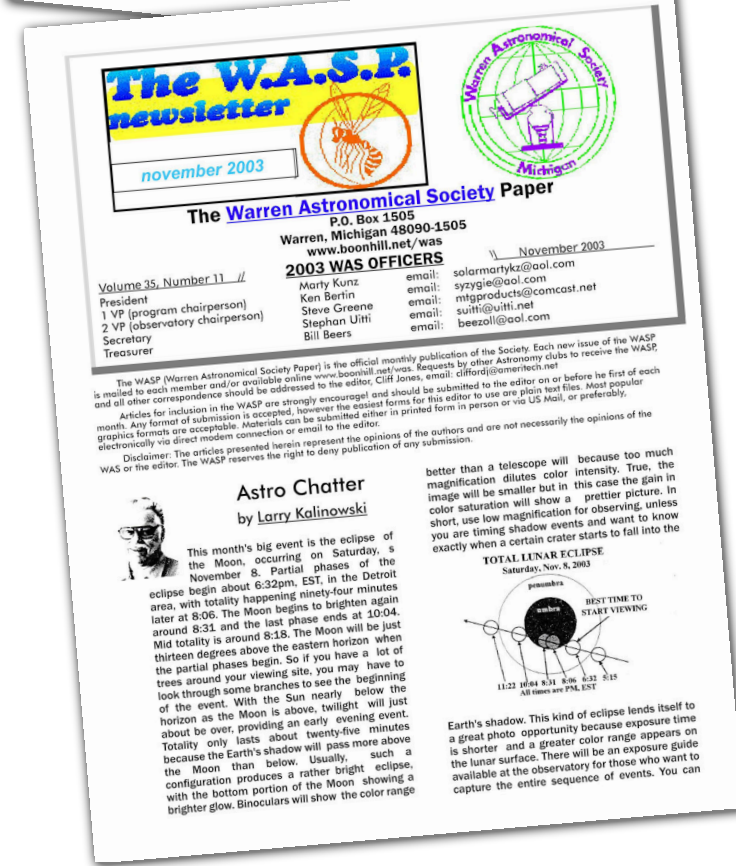
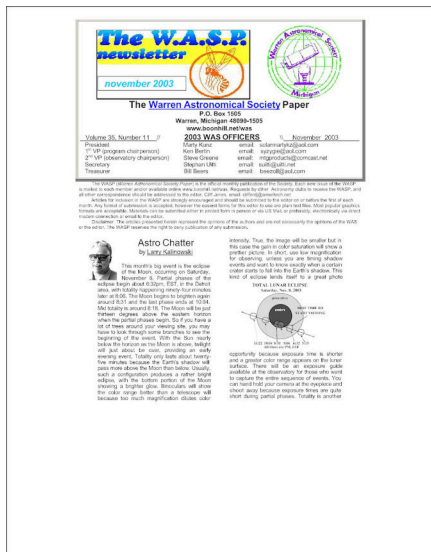
From the Scanning Room

A-a-a-n-d...we're back in the scanning room, When I was picking the issues to highlight for this month, I made an interesting discovery when getting an image of the front page of the November 2003 issue. While it was a PDF file, it was an image PDF (each page of print is a JPG image, even the text) and the image was reduced in size, to boot. Hence, the front page wouldn't take up very much real estate on an 8.5x11 page.

I had an actual physical copy from the Jim Shedlowsky collection and ran that through the scanner. But the paper version was B&W, while online it was in color. Naturally, I decided to reproduce the scan in color. This version is now a part of our online collection so it will be a searchable copy.

Bottom left is an image of what the original PDF looks like (yes, we still have that version)

**Dale Thieme,
Chief scanner**



NOVEMBER 2023

Notable Sky Happenings

Nov. 1 - 7

Jupiter is at opposition on the 2nd. This is its brightest appearance for the entire year (E evening). Daylight time ends at 2:00am on the 5th. Set clocks back one hour.

Nov. 8 - 14

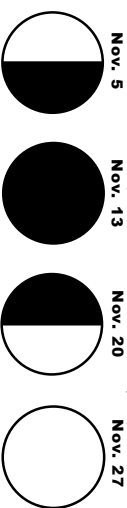
Moon is at the lower left of Venus on the 9th and at the lower left of Spica on the 11th (ESE predawn)

Nov. 15 - 21

The Leonid Meteor Shower peaks the evening of Nov. 17-18. Expect an average of 15 meteors per hour in a dark sky. Best time to look is between midnight and sunrise. The "star" to the right of the Moon on the 20th is Saturn (S evening).

Nov. 22 - 30

Moon is at the upper right of Jupiter on the 24th (ESE eve.) and to the left of Aldebaran on the 27th (E evening). Venus is above and to the left of Spica on the 30th (E predawn).



Now Showing

"Two Small Pieces of Glass"

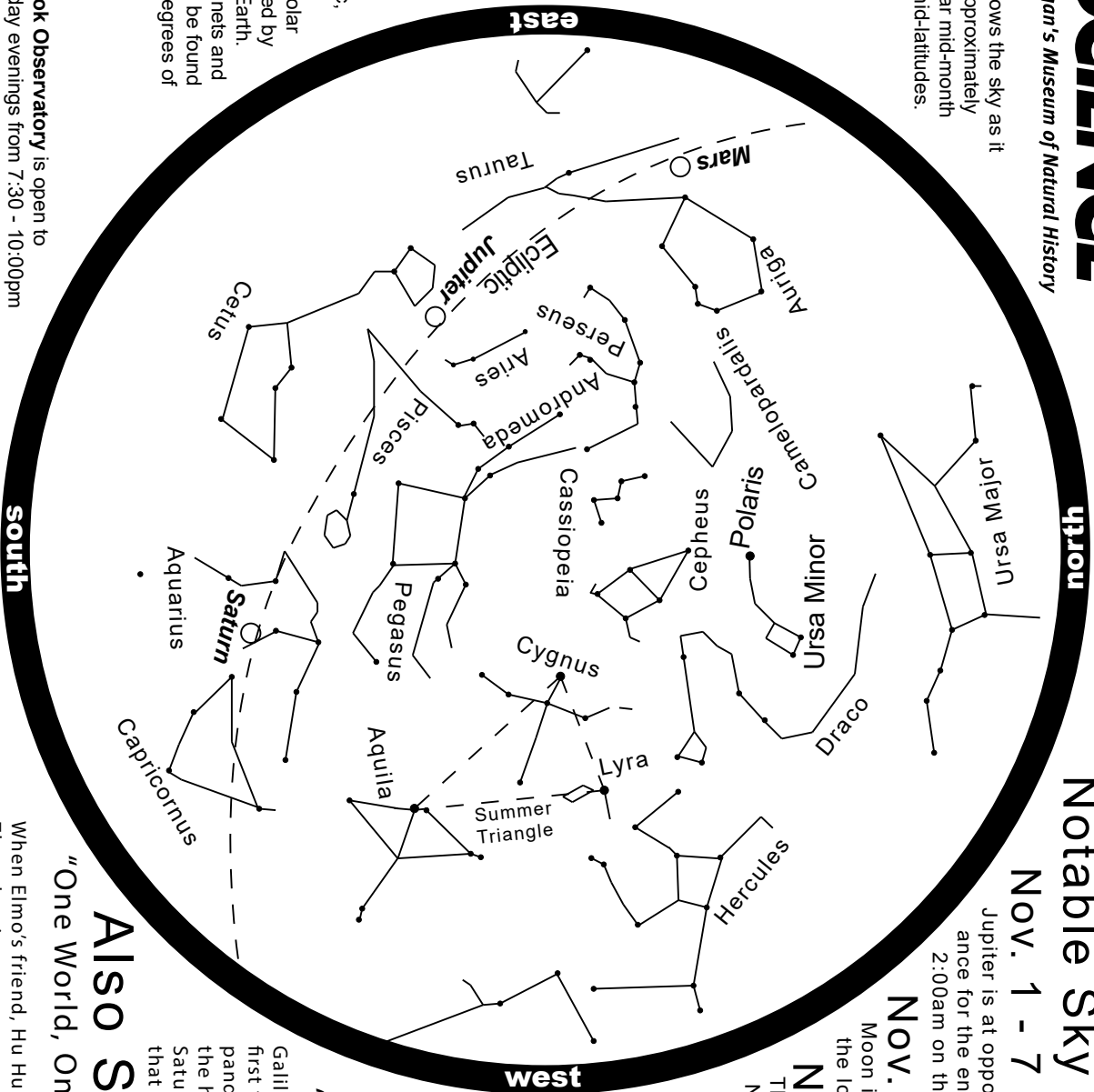
Galileo did not invent the telescope, but he was the first to use it to examine the sky. Telescopes have expanded our knowledge of the cosmos. We'll learn about the history of telescopes, explore the Galilean Moons, Saturn's rings, the structure of galaxies and view images that were made through our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

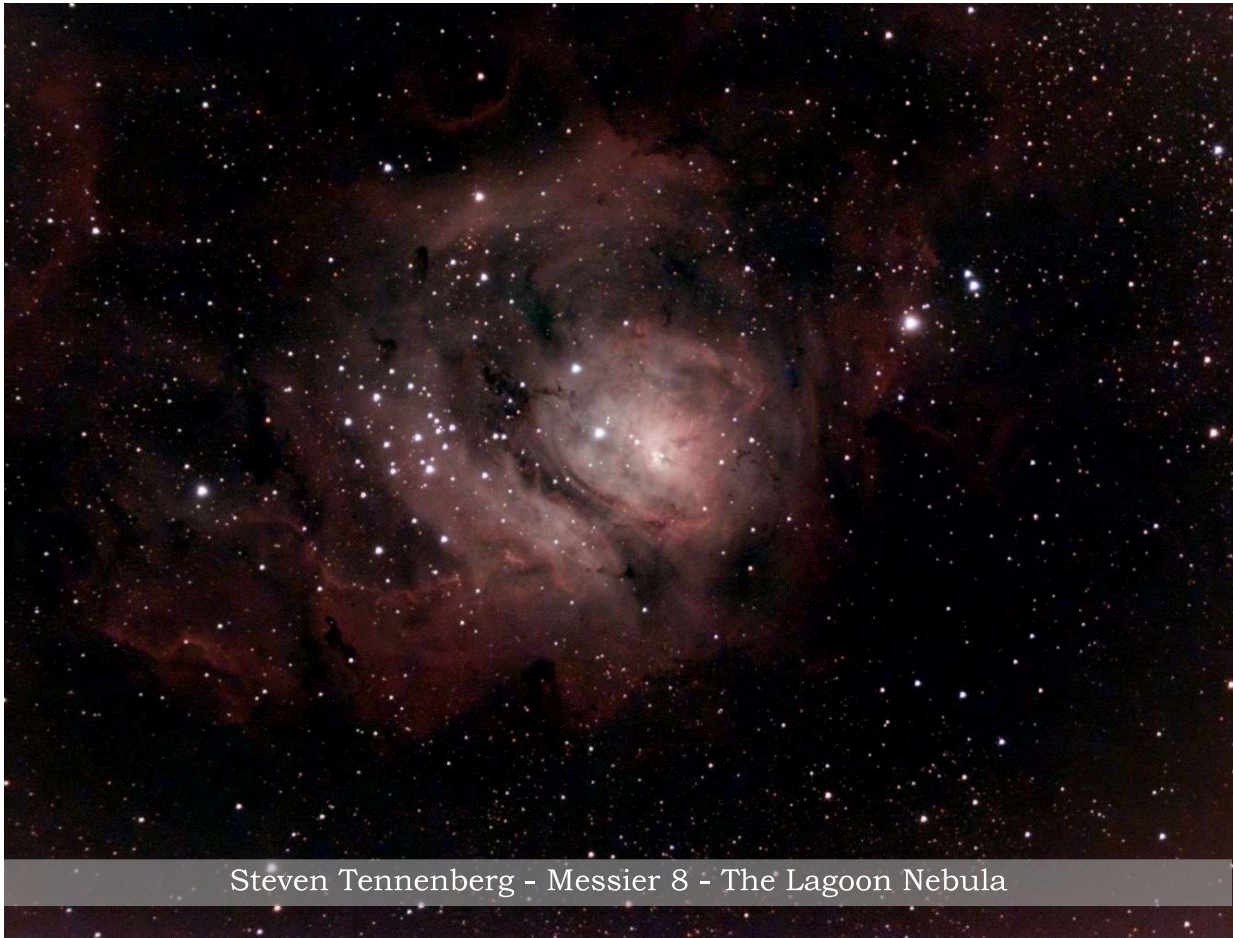


What is that dashed line? It's the ecliptic, the reference plane of the solar system, defined by the Sun and Earth. The major planets and the Moon can be found within a few degrees of this plane.

This chart shows the sky as it appears at approximately 8pm EST near mid-month at northern mid-latitudes.

The Cranbrook Observatory is open to the public Friday evenings from 7:30 - 10:00pm EST, 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>



Steven Tennenberg - Messier 8 - The Lagoon Nebula

November 2023


Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2 Jupiter at Opposition	3	4
5 S Taurid Meteor Shower Daylight Saving Ends	6 Cranbrook/Officer elections Moon at Apogee: 404569 km	7 Election Day	8	9	10 Veteran's Day observed	11 Remembrance Day (Can) Veteran's Day (USA)
12 N Taurid Meteor Shower Diwali	13 NEW MOON Uranus at Opposition	14	15	16 Macomb	17	18 Leonid Meteor Shower
19	20	21 Moon at Perigee: 369824 km	22	23 Thanksgiving	24	25 Stargate Open House
26	27 FULL MOON	28	29	30		

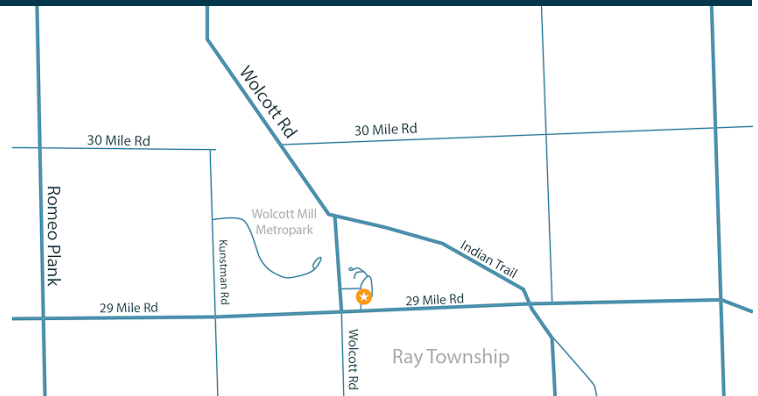


Stargate Observatory

Monthly Free Astronomy Open House and Star Party 6:30 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.

Treasury Report

Treasurer's Report for October 31, 2023

BOA account:

Balance:..... \$25,108.44
 Received:..... 385.00
 Expense:..... 2024.18
 (Insurance, Orkin, Groups.IO fee, supplies)

PayPal Account:

Balance:..... \$123.94
 Received:..... 123.94
 Paid 0.00

Membership

Total Paid Memberships..... 109

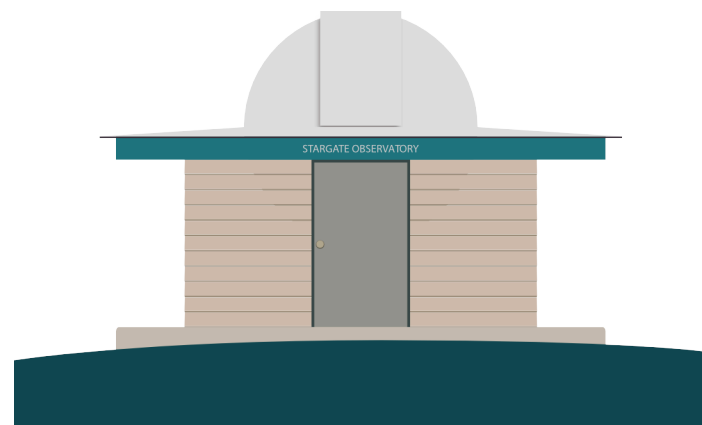
Notes from the Treasury:

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 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**



Astronomical Events For November 2023		
Add one hour for Daylight Saving Time		
Source: http://astropixels.com/almanac/almanac21/almanac2023est.html		
Date	Time (h:m)	Event
2	23:00	Jupiter at Opposition
3	13:31	Pollux 1.4°N of Moon
5	3:37	LAST QUARTER MOON
5	19:00	S Taurid Meteor Shower
6	11:19	Regulus 4.2°S of Moon
6	16:49	Moon at Apogee: 404569 km
9	4:28	Venus 1.0°S of Moon: Occn.
11	0:09	Spica 2.4°S of Moon
11	3:49	Moon at Descending Node
12	19:00	N Taurid Meteor Shower
13	4:27	NEW MOON
13	13:00	Uranus at Opposition
14	14:42	Antares 0.9°S of Moon
16	16:17	Mercury 2.5°N of Antares
18	0:00	Mars in Conjunction with Sun
18	1:00	Leonid Meteor Shower
20	5:50	FIRST QUARTER MOON
20	9:02	Saturn 2.7°N of Moon
21	16:03	Moon at Perigee: 369824 km
24	6:02	Moon at Ascending Node
25	6:10	Jupiter 2.8°S of Moon
26	19:02	Pleiades 1.1°N of Moon
27	4:16	FULL MOON
28	4:00	Venus at Perihelion
29	5:27	Venus 3.9°N of Spica
30	22:23	Pollux 1.6°N of Moon

Stargate Report

October Open House

Riyad opened up the observatory under cloudy conditions, I arrived a bit later with the Space Simulator. There were about a dozen to 16 people on site and 10 of them flew the spaceship before we called it a night around 9:30pm due to continued cloud cover.

November Open House

Saturday November 25th 6:30pm



Loaner Scope upgrades

Mark Kedzior took advantage of a furniture discard and fabricated these mounts for two of our loaner scopes.

Top right image

The reflector on the right is a fiberglass tube with 8 x 50 finder scope that came with the Meade Starliner pier EQ mount with AC drive. There are two Meade eyepieces that are in the white lid Rubbermaid in which the pier and EQ mount are stored that go with that particular tube, but can be used for either scope. The other Meade has a Sonotube OTA with 6 x 30 finder scope.

Mark made tube OTA cradles for both, lined with felt so one can rotate tube to comfortable viewing position and also balance the scope by loosening black knob then re-tightening when satisfied with the alignment. The Meade on the left has very clean mirror - the fiberglass Meade has deteriorating coatings but still can be used. He also touched up the collimation wing nuts with WD40 so nothing is seized up. They probably got a little rusted standing on its mirror end on the cement floor in the shed - now they can be stored off the floor in their new Dob mounts. The azimuth bases can be adjusted for tension and smoother rotation by tightening or loosening the lag bolt that is accessible through the base of the mount.

Bottom right

A close-up of the mount structure.



Outreach

From
Facebook

This is a link to a reel we made of the event. It highlights all of the goings-on around town on Saturday. Thank you so much for being a part of this production! Parents and kids certainly seemed very impressed with the engagement and education that was a part of the day. Many adults enjoyed it as well! I hope that we can grow this program. All the best of luck to everyone! You were a delight to work with.

Sincerely,



Denise
Denise J. Murray

Ann Arbor SPARK
Denise Murray
Economic Development & Marketing Specialist
City of Brighton
P. (734) 353-7444
Denise@annarborusa.org



Meeting Minutes

WARREN ASTRONOMICAL SOCIETY OCTOBER BOARD MEETING (VIRTUAL) SEPTEMBER 25, 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, Publications Chair Dale Thieme (quorum present).

CLOSED SESSION

Discussion on Service Awards and upcoming WAS Elections.

OPEN SESSION

Discussion on resuming issuance of name badges for members. Motion by Adrian Bradley to approve purchase of supplies for name badges - second by Dale Thieme - motion passed. WAS Elections - per bylaws, a member not running for an elected office may serve on the nominating committee for the Annual WAS Elections. Mark Kedzior was appointed Nominating Committee Chair person and will preside over the WAS Elections on Monday, November 6th at Cranbrook before the regular meeting.

OFFICER REPORTS

President Bob Trembley reported on the GLAAC Astronomy at the Beach event held September 22-23. He reported 1,000 in attendance on Friday and 2,000 on Saturday. Comments and discussion took place.

1st VP Dale Partin commented on AATB - reported the status of presentation schedule and lack of short presentations for future meetings.

2nd VP Jeff MacLeod reported on the wasp infestation in the Big Dob shed, which needs to be addressed ASAP. Motion by Adrian Bradley to approve up to \$1500 for wasp removal - second by Jeff MacLeod - motion passed. Jeff will contact professional exterminator for removal.

Treasurer Adrian Bradley reported \$29K in WAS treasury (report can be found in WASP) - discussion on purchase of laptop computer (purchase approved at previous board meeting) for Stargate.

Outreach - volunteers needed for Solar eclipse event at Cranbrook on Saturday October 14th.

Publications Chair Dale Thieme reported on the WAS 2024 Calendars which have arrived and are available for sale for \$15 each and \$20 if mailed. He also reported on the resumption of name badges being made for members.

OLD BUSINESS

WAS Banquet - need to sell tickets in advance at meetings.

Discussion on WAS Promo Video, keys to message board at Stargate - WAS Library relocation status - banners for WAS tables.

NEW BUSINESS

Mark Kedzior reported on availability of WAS Apparel with logo imprint - he displayed items and said orders can be placed and prepaid at each Cranbrook meeting, and order will be delivered to next Cranbrook meeting. He will provide an ad with price list and items available to be placed in each issue of the WASP.

Motion to adjourn by Adrian Bradley - second by Dale Thieme - motion passed.

Meeting adjourned at 8:23PM.

Respectfully submitted,

Mark Kedzior
Secretary, WAS

WARREN ASTRONOMICAL SOCIETY CRANBROOK (Hybrid) MEETING OCTOBER 2, 2023 7:00PM

Meeting called to order for Cranbrook hybrid meeting at 7:00PM by President Bob Trembley. Persons in attendance: 22 - Zoom - 7 & YouTube - 4 @ 8:30PM).

President Bob Trembley gave general announcements and discussed upcoming board elections to be held on November 6th. Still are seeking persons interested in the offices of Secretary, Treasurer and Publications. Reports by 1st VP and 2nd VP. Secretary Mark Kedzior displayed WAS Apparel which can be ordered at each Cranbrook meeting. Introduction of attendees took place also. Cranbrook will be hosting solar eclipse event on October 14th and requests volunteers to assist.

No Special Interest Group reports - no observing reports given.

SHORT PRESENTATION

Long time WAS member Mike O'Dowd shared video on "Mars Sample Return" from NASA, and described this future mission and details of how the samples from the surface will be collected and how it will be returned to earth. Question and discussion followed his informative presentation. To see his presentation in its entirety, go to: <https://www.youtube.com/warrenastro>

Members were invited to visit the Galileo Exhibit at Cranbrook during break time.

MAIN PRESENTATION

President Bob Trembley gave a presentation on one of his favorite topics - "Exoplanets: Not Science Fiction Anymore". Questions and discussion followed his informative presentation. To see his presentation in its entirety, go to: <https://www.youtube.com/warrenastro>

Meeting ended at 9:00 PM

Mark Kedzior
Secretary, WAS

WARREN ASTRONOMICAL SOCIETY

MACOMB (Hybrid) MEETING

OCTOBER 19, 2023 7:00PM

Meeting called to order at 7:00 PM at Macomb, Room E208, by President Bob Trembley. Attendance - 15 - Zoom - 7 & YouTube - 3 @ 8:00PM.

President Bob Trembley opened meeting with roll call of attendees. General announcements: 2024 WAS Calendars are available for sale - \$15 each or \$20 by mail - WAS Awards Banquet tickets for December 11th available for pre-sale @ \$35 each until December 4th and \$40 at the door. WAS Annual Election of Officers on Monday, November 6th at Cranbrook - seeking nominees for term-limited offices of Secretary, Treasurer and Publications - if interested contact Mark Kedzior, Nominating Committee Chair at secretary@warrenastro.org or any current board member for information. Outreach events - Volunteers needed for event at Stony Creek on Saturday, October 21st and downtown Brighton on Saturday, October 28th from 1-6PM. 1st VP Dale Partin reported on upcoming presentation status and need for short presentations. 2nd VP Jeff MacLeod reported on clean-up/organization of Dob Shed - easier access for use of telescopes was accomplished - excess, unused telescopes and gear are being stored in Big Dob trailer until decision is made as to their disposition/need in our inventory - eradication of wasp infestation was successful. Treasurer Adrian Bradley reported a balance of \$25K in WAS Treasury.

OBSERVING REPORTS:

Adrian Bradley reported on the Okie-Tex event he attended, and shared his images - also shared some lunar images and solar eclipse images taken on October 14th from Caseville while there was a break in the clouds.

PRESENTATION:

Ethan Partington, Graduate Astrophysics Researcher, Physics PhD Candidate and Planetarium Coordinator at Wayne State University, gave their presentation on "Demystifying Black Holes". In this very informative and well-explained presentation, one came away from this understanding more clearly what black holes are and how they are created. Some interesting facts in the presentation: "Black holes are astronomical objects dense enough that light is trapped by their gravity" - "Escape Velocity - the speed needed to escape an object's gravity depends on the object's mass and density" - "Material inside a black hole is in a state beyond our current understanding of physics and is completely unobservable to us". Questions and discussion took place throughout their presentation. To see their presentation in its entirety, go to:

<https://www.youtube.com/warrenastro>

Meeting ended at 9:05PM.

Mark Kedzior
Secretary, WAS

Name Tags Are Back!



Now that we are back to in-person meetings, we are offering name tags for our membership to wear at meetings and outreach endeavors.

If you haven't received a name tag and would like one, contact Dale Thieme at Publications@warrenastro.org to order one.



From Gary Ross

Beverly A. Niedelson, an amiga going 'way back, is touring Italy. She sent this observatory picture -- which does not look like an observatory. Beverly cares nothing for the physical sciences, but does like a few of the people engaged in them, actually very few.

(She gave permiso to reproduce the picture.)

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

Subject: As seen from a tour bus

Date: 2023-10-24 06:45

From: Beverly Niedelson

To: Gary Ross

Observatory on Mt. Etna (Akron). Enlarged.

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!

Spy the Seventh Planet, Uranus

By Liz Kruesi

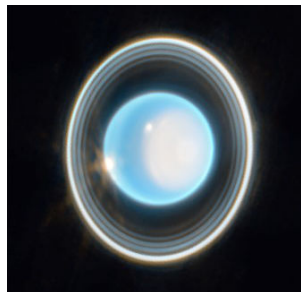


Image 1: Uranus hosts 13 faint rings, 11 of which are visible in this JWST image. The planet was 19.67 times the Earth-Sun distance from our planet (1.83 billion miles) when JWST captured exposures through two near-infrared filters on February 6, 2023. The white region in the right side of Uranus is one of the planet's polar caps. This icy world orbits the Sun differently from the rest of the solar system's planets - Uranus rolls along on its side.

[NASA, ESA, CSA, STScI; Image Processing: Joseph DePasquale (STScI)]

You might be familiar with Saturn as the solar system's ringed planet, with its enormous amount of dust and ice bits circling the giant planet. But Uranus, the next planet out from the Sun, hosts an impressive ring system as well. The seventh planet was the first discovered telescopically instead of with unaided eyes, and it was astronomer extraordinaire William Herschel who discovered Uranus March 13, 1781. Nearly two centuries passed before an infrared telescope aboard a military cargo aircraft revealed the planet had rings in 1977.¹

Since that discovery, multiple observatories have revealed more details of Uranus and its ring system. Most recently, the NASA-led JWST space observatory captured the planet and its rings in detail. This recent image combines just 12 minutes of exposure in two filters to reveal 11 of the planet's 13 rings. Even some of the planet's atmospheric features are visible in this image. Even with advanced imaging like that from JWST, much of Uranus remains a mystery, including why it orbits the Sun on its side. This is because only one spacecraft has ever visited this planet: NASA's Voyager 2, which flew by the distant planet in the mid-1980s.²

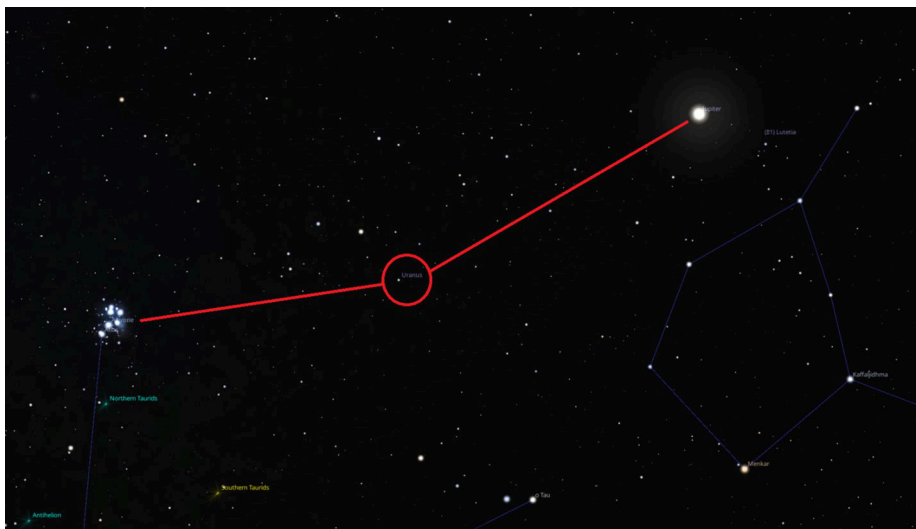
Planetary scientists are hoping to change that soon, though. Scientists recommended in a [report](#) released last year from the National Academies of Sciences, Engineering, and Medicine that Uranus be the focus on the next big planetary science spacecraft mission. Such a large-scale mission would gain insight into this icy giant planet and the similar solar system planet, Neptune.

If you want to catch a view of Uranus with your own eyes, now is prime time to view it. This ice giant planet lies perfectly posi-

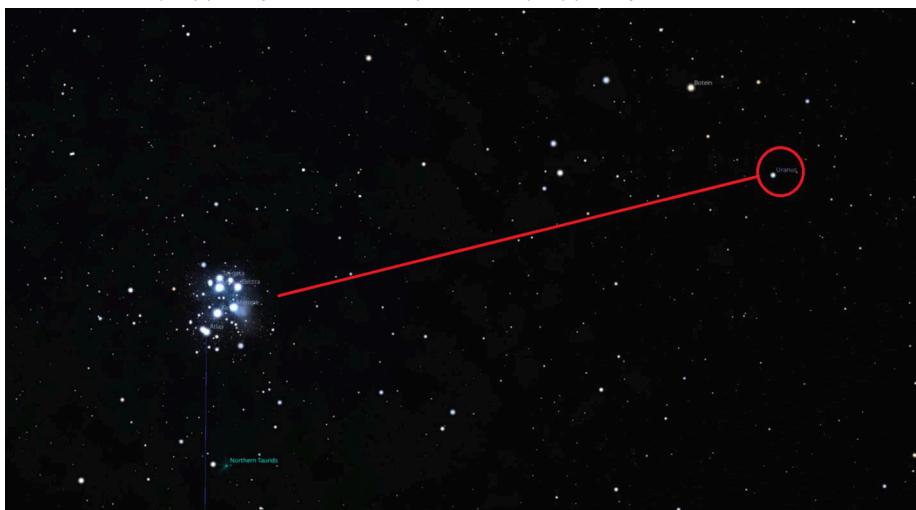
tioned in mid-November, at so-called "opposition," when its position in its orbit places it on the other side of the Sun from Earth. That location means our star's light reflects off Uranus' icy atmosphere, and the planet appears at its brightest.

To find it, look overhead just after midnight on November 13. Uranus will lie about halfway between the brilliant planet Jupiter and the diffuse glow of the Pleiades star cluster (M45). While Uranus may look like a bright blinking star in the night sky, its blue-green hue gives away its identity. Binoculars or a telescope will improve the view.

For more about this oddball planet, visit NASA's [Uranus page](#).



Above: Sky map picturing M45, Uranus and Jupiter. Below: Sky map picturing M45 and Uranus, Stellarium



¹ For more about the infrared scope, <https://web.archive.org/web/20230429120852/https://www.nasa.gov/vision/universe/watchtheskies/kuiper.html>

² See more about the flyby at <https://www.nasa.gov/history/35-years-ago-voyager-2-explores-uranus/>