The W.A.S.P.

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The Warren Astronomical Society Publication

The WASP

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P.O. Box 1505
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The Warren Astronomical Society, Inc., is a local, non-profit organization of amateur astronomers. The Society holds meetings on the first Monday and third Thursday of each month, starting at 7:30 p.m.

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

Membership and Annual Dues

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

Astronomical League (optional) $7.50

Send membership applications and dues to the treasurer:

c/o Warren Astronomical Society, Inc.
P.O. Box 1505
Warren, Michigan 48090-1505

Pay at the meetings

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

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

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

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

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

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

In This Issue

Observation Reports 5
WAS Apparel Price List 7
HH211 8
Letters 8
WAS Astrophotos 9
C.W. Sirius Observatory 10
Northern Cross Observatory 11
Presentations 12
Skyward 13
Book Review 14
More Book Reviews 17
Over the Moon 18
History S.I.G. 19
Sky Chart 20
Calendar 21
Stargate Observatory 22
Treasury Report 23
Stargate Report 23
Astronomical Events 23
Meeting Minutes 24
GLAAC 27
NASA Night Sky Notes 28

About the Cover

The scene beyond the window was a nightscape, featuring Orion, taken by Adrian Bradley. For more on Orion, check out the NASA Night Sky News in this issue.

They're Here!

Two ways to get your calendars

If you can pick up your calendar at a Cranbrook or Macomb meeting, you can pre-order on PayPal or pay by check or cash at the meeting for **$15** each.

If you need your calendars mailed, then the cost is $15 + $5 flat rate shipping per order (regardless the calendar count) via PayPal or by sending a check to Treasurer, Warren Astronomical Society, PO Box 1505, Warren MI, 48090. Be sure to include your mailing address so we can get them to you.

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

Order your 2024 Warren Astronomical Society calendar now!

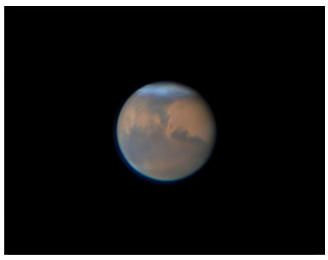
These beautiful calendars feature W.A.S. member astrophotography photos, including:

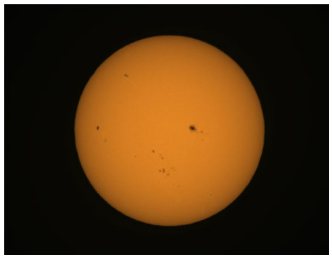
- Bob Berta -Heart Nebula
- Bob Berta - Rosette Nebula
- Adrian Bradley - Moon Over the Dock
- Adrian Bradley - Orion Over the Lake
- Ken Heilig - Ken Doing Outreach with His Vintage Telescope
- Dale Hollenbaugh - Mars
- Dale Hollenbaugh - Messier 31- the Andromeda Galaxy
- Steven Tennenberg - Milky 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

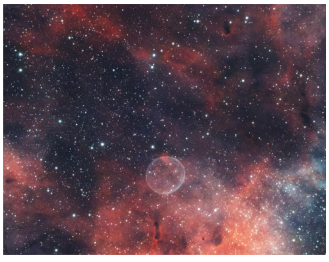
And the Aurora over Cadillac West by Bill Beers on the cover.





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

Door Prizes

Menu

THREE ENTREES:

Ukrainian style meatballs in mushroom sauce
Boneless breaded chicken breast w/choice of sauce
Smothered style pork chops w/ mushrooms and onions

TWO VEGETABLE SIDES:

Green beans w/almonds
Normandy blend (broccoli -carrots – cauli-flower - squash - zucchini)

Fresh salad w/house dressing – relish tray – as-sorted cold salads
Rolls & butter – soft drinks

TWO POTATO SIDES:

Rosemary roasted red skins
Seasoned whipped w/gravy

PASTA SIDE:

Mostaccioli w/marinara

DESSERT:

cheese cake w/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)

Observation Reports

1 November

The Sun. Two S. hemisphere groups: a Waldmeier "J" on easterly limb, single large feature, and "C" of ~ 15 spots.

Seeing fair.

6-cm. refractor, Mylar aperture filter.

.....

COMMENTARY: More evidence of a modest Activity Cycle.

4 November

The Sun.Three small to very small groups all S. hemisphere. Very near W. limb (probably) small Waldmeier "J" but fore-shortening makes ident. uncertain. Other "J" near central disc with multiple umbrae. A "B" to east of it, no more than nine spots.

Transparency fair.

Instrumentation as before.

5 November

The Sun. Two groups. Waldmeier "B" group prev. described slightly more active but morphology unchanged. "J" near centre disc has all most "granulated" umbra, but no companion spots.

Seeing poor, stratus.

Instrumentation as before.

9 November

The Sun. 2 small groups, 1 in either hemisphere. The largest, Waldmeier "C".

Transparency good, seeing poor.

5-cm refractor @ 45X, Mylar aperture filter.

11 November

The Sun. 2 de minimis groups in each hemis. similar longitudes. Most prominent, Waldmeier "H" ~ 8 spots and primate with fragmented umbra. Other in S. hemisphere, class "B". Minute examination revealed no other spots.

Transparency good, seeing fair.

Instrumentation as before.

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COMMENTARY: All though different polarities, feeling persists an association between groups across aequator. So lacking in photosphere activity, in possibly two days as groups go to limb, a chance of no spots on facing hemisphere!

14 November

The Sun. One group, Waldmeier "B".

Transparency fair (cirrus).

5-cm f /11 refractor @ 45X

14-15 November

Jupiter. Ganymede approaching greatest E. elongation seems especially bright in relation to other moons. (4.7) This face has higher albedo or ambient atmospheric condition? Both Aequatorial Belts approx. equal width. No distinct ruddy aspect to the North Belt now. Purple? Hint of the North Temperate Belt delimiting a polar "hood" as opposed to a cap, but very indistinct.

Transparency poor from cirrus. Seeing good.

4-in. f /15.25 refractor @ 120X.

17 - 18 November

Ouranus. Seen well west of meridian. Seeing sufficient to identify disc with no ambiguity. Disc boundaries indistinct. Grey-blue, no hint of the green often described. Sky glow? Conditions/ size of instrument = no search for satellites. Mag. 5.6.

Transparency good, seeing excellent.

4-in. refractor, f /15.25 @ 120X.

.....

COMMENTARY: Fast moving for such distant planet, well removed from chart position of 8 Nov. in Observer's Handbook. 84 yr. revolution. Observer recalls conjunction with Regulus 60+ years ago.

18 November

The Sun. One S. hemis. group, small Waldmeier "B" or "C". Approx. 7 spots.

Transparency good, seeing fair.

Solar instrumentation as before.

18 - 19 November

Ouranus and variable stars. Again: amazingly bright for so distant a world. Powder blue, but Observer's colour vision has skew. No features on disc,3.8 arc-sec., but sense of limb darkening. Upper atm.? If better transparency, moons in reach with Mighty Borr II, since 3 ~ 13.6 mag. (*OBS. HAND. 2023*) Earth presently "looking down" at his north hemisphere. Intended var. obs'ns in Pyxis and Antlia, but sky failed. During SV Leporis degrading. By time of finding SY CMa, even 11th mag. no longer vis.

Transparency fair, then poor.

16-in. Schm-Cass f /10 @ 185X

.....

COMMENTARY: Unless at high locations under decent atmosphere, difficult to believe 19th-20th c. observers could discern belts on planet. To compensate for inferior oculars, at least 2X magnif. supra would be req'd. Certainly Lick, post 1887, Pic-du-Midi, post 1930(?) and Yerkes, post 1897 saw study of the "ice" giants.

November 19 - 20

Ouranus. Observed two satellites when planet east of meridian. Farther one @ 90 deg. az. Closer moon about 60% other's distance ~ 120 deg. az. Neither constantly in view.

Transparency fair (approaching cirrus from S.W.), Moon not set, seeing fair to good.

16-in. Borr II, with 185X, 340X

19 - 20 November, supplemental

Ouranus. Handsome Joe McBride has made a satellite chart, but not easy to see congruence with telescope view. Inquiry continues.

Supplemental to Ouranus report

Handsome Joe McBride acquired Hubble Space Telescope diagram for reported date: Umbriel and Ariel. Other satellites beyond the high mag. field.

Repeat: "Mighty Borr" II at Veen Obs'y.

24 - 25 November

Transit of Ganymede. Observed just before ingress, with yellow-gold mistaken for Io. W/o a reference work, thought the satellite would be occulted, but entered transit at high southern latitude. Easy to observe well after passing planetary limb given the limb darkening. *OBS. HAND.* = 00.00 U.T. for beginning, but seemed to Observer a few minutes earlier. 1h 20m for total transit per *HANDBOOK*. Obs'n ended 00.37 with Ganymede short of central meridian but at very high S. latit. very difficult to see due to lack of limb darkening. On Jupiter proper, obvious but vaguely defined north polar "hood", grey blue (?)

Transparency poor, cirrus + proximity of gibbous Moon, seeing fair.

16-in. f /10 S-C , 185X

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COMMENTARY: The yellow-gold was in stark contrast to "cooler" colours of the ball's southern limb, but still striking. Interesting is the moon's high latitude transit -- describing a shallow chord -- considering an inclination of orbit a tiny 0.18 degrees. (LaPlace Plane is reckoned from the planet's "EQUATOR" Emphasis in original, p. 25) Therefore Ganymede's orbit is essentially congruent to planet aequator. The inclination of Jupiter aequator to his orbital plane is only 3 deg., which implies the observation was close to a maximum planetary tilt to SOUTH, thus taking the moon's path nearly over the South Polar Region.

28 November

The Sun. 4 or 5 groups, not a simple matter of parsing in the remainder of large complex reported previously. The array could be classed as Waldmeier "E" or "D", very extensive. fresh group of only one spot just on E. limb.

Transparency excellent (cold front), seeing fair.

5-cm. f /10 refractor @ 45X

29-30 November

TZ Leomis. Long Period Var. in "hind-quarters" near 81 Leo. Mag. 9.6, ruddy. For that, initially thought much brighter. Difficult.

Transparency poor: gibbous Moon and faint cirrus.

16-in. f /10 "Mighty Borr" and 4-in. f /10 refractor.

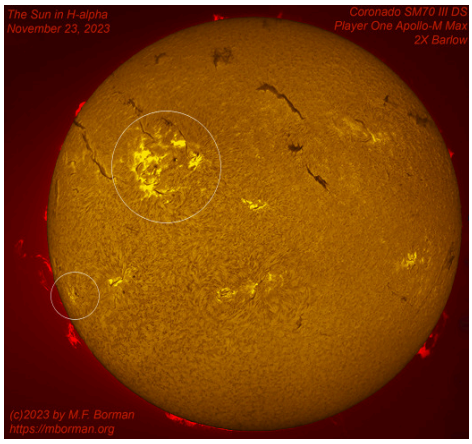
30 November

The Sun. Five or six groups distributed both hemispheres, still difficult to parse the large complex now west of C.M. Wide range of Waldmeier classes.

Transparency poor, cirrus, seeing fair.

Instrumentation as before.

-GM Ross



High-lighted is the massive plage and sunspot tangle previously reported.

Image: Joe McBride

"[James McNeill Whistler] was elected President of the Royal Society of British Artists. His failure to be re-elected caused no surprise. He remarked that " the artists had come out and the British had remained".

ENCYCLOPAEDIA BRITANNICA, 1939, p. 573.

(Photo of Gary Ross and Bill Beers at Cadillac West by Joe McBride-Ed.)

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

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 ½" logo $15.00

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

IMPRINT LOCATIONS:

Front left chest (3 ¼" logo)

Front or back (9" or 10" logo)

Back (12" logo for jackets or sweater)

Combination front left chest (3 ¼" logo) and back (9", 10" or 12" logo) – add $7.00

Choose when placing order

IMPRINT ON YOUR CLOTHING ITEM: Logo + Imprint Charge

3 ¼" 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

Letters

Possibly final Letter to former award-winning WASP

MOON WITH NAKED EYE

A few numbers ago, Savant Rik Hill made reference to naked eye identification of non-mare features even in antiquity. Copernicus was one of the objects Hill mentioned. This astronomy challenge harks back to an evening at winter's end or early spring . . ..

My mother and I were heading to Lowell from Royal Oak via Interstate 96, a late start likely to avoid Oakland County traffic. In central Michigan a waxing crescent hung in due west (?) with deepening twilight, transparency excellent. This trip was possibly in '06 or '7.

As sky darkened and crescent commensurately brightened, my basilisk eye caught a possible imperfection on the terminator. In some minutes I was sure: a bump or a "tooth" on the **left** part of the bow, i.e. the southern hemisphere. At home are two non-rigourous sources for lunar identification, but no atlas. There is Sky and Telescope's early 1960's vastly reduced *Mappa Selenographica* (1926), K. Andel, plus the large “bi-valve” by North American Aviation featuring 1930's photographic plates, probably the finest prime focus pictures into-”mid-”century. (Dad picked a couple up at the 1962 A. L. Nat'l Convention).

Neither depiction is in crescent, so one might refer to D. Alter's photographic atlas from 1960's. But there is a variable of lunar phase, plus contrast in reproduction, both limiting. Contrast is subdued on Selenographica, but the magazine could only do so much from European copies. With magnifying glass, the most likely candidate for the deformation was not Mare Crisium, as I supposed that evening, much too far north. STEVINUS. Inconspicuous on *Selen.*, that crater can be very prominent with photography.

This assessment might be off the rails, subject to more seasoned observers, but with the terminator's speed of advance, one would have to view at the best hour. Important too is the combination of a dark surrounding sky + a pellucid atmosphere atmosphere. "Hearing no nays, the motion carries".

G. M. R.

HH211

By Tab Ahmad

Featured in this image from the NASA/ESA/CSA James Webb Space Telescope is Herbig-Haro 211 (HH 211), a bipolar jet traveling through interstellar space at rapid speeds. 1,000 light-years away from Earth in the constellation Perseus, the object is one of the youngest and nearest protostellar outflows, making it an ideal target for Webb.

Herbig-Haro objects are luminous regions surrounding newborn stars, and are formed when stellar winds or jets of gas spewing from these newborn stars form shockwaves colliding with nearby gas and dust at high speeds. This spectacular image of HH 211 reveals an outflow from a Class 0 protostar, an infantile analogue of our Sun when it was no more than a few tens of thousands of years old and with a mass only 8% of the present-day Sun (it will eventually grow into a star like the Sun).

Infrared imaging is powerful in studying newborn stars and their outflows, because such stars are invariably still embedded within the gas from the molecular cloud in which they formed. The infrared emission of the star’s outflows penetrates the obscuring gas and dust, making a Herbig-Haro object like HH 211 ideal for observation with Webb’s sensitive infrared instruments. Molecules excited by the turbulent conditions, including molecular hydrogen, carbon monoxide and silicon monoxide, emit infrared light that Webb can collect to map out the structure of the outflows.

The image showcases a series of bow shocks to the southeast (lower-left) and northwest (upper-right) as well as the narrow bipolar jet that powers them in unprecedented detail — roughly 5 to 10 times higher spatial resolution than any previous images of HH 211. The inner jet is seen to “wiggle” with mirror symmetry on either side of the central protostar. This is in agreement with observations on smaller scales and suggests that the protostar may in fact be an unresolved binary star.

[Image description: At the center is a thin horizontal multi-colored cloud tilted from bottom left to top right. At its centre is a dark brown cloud from which both outflows are spewing from. These outflows transition from colours of yellow/orange, to a light blue region, with prominent light pink features in the outer regions.]

Image credit:

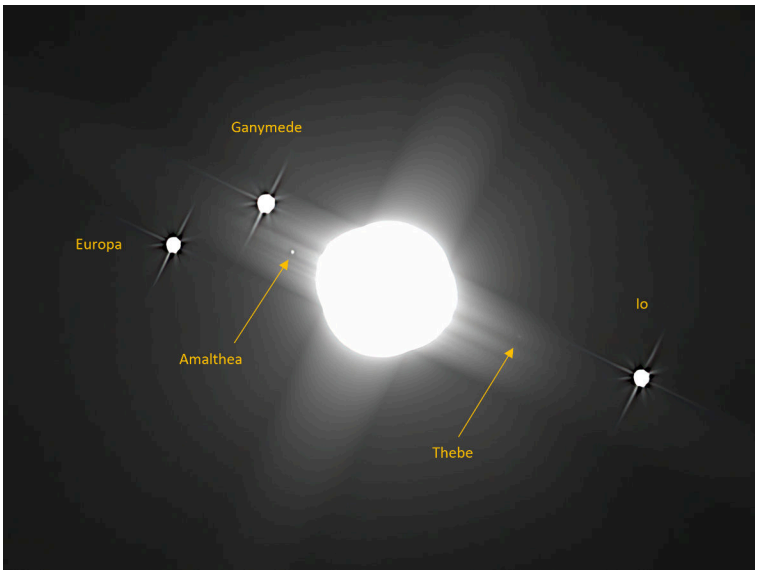
ESA/Webb, NASA, CSA, T. Ray (Dublin Institute for Advanced Studies)

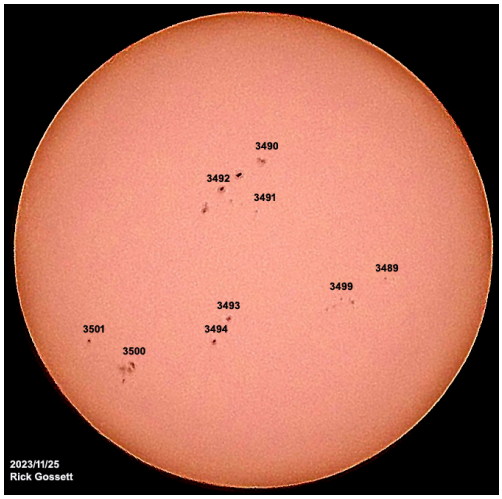
WAS Astrophotos

Right: Jupiter and Ganymede near Opposition – Oct. 31, 2023

Below: Jupiter with five moons including Amalthea and Thebe – Oct. 31, 2023 06:28 UTC

Photos by Dale Hollenbaugh





Right: Solar activity got off to a slow start in November. It has increased as we get near the end of the month.

Photo: Rick Gossett

The View From
C.W. Sirius Observatory

Messier 7 – Open Star Cluster

Messier 7, also known as NGC 6475, is a beautiful open star cluster in the constellation Scorpius. Sometimes called the Ptolemy Cluster, M7 is roughly 1000 light-years away from Earth. Being located close to the "stinger" of Scorpius, it has a declination of -34.8˚, which makes it the southernmost Messier object. M7 has been known since antiquity; it was first recorded by the 2nd-century Greek-Roman astronomer Ptolemy in 130 AD., who described it as a nebula. Italian astronomer Giovanni Batista Hodierna observed it before 1654 and counted 30 stars in it. In 1764, French astronomer Charles Messier cataloged the cluster as the seventh member in his list of comet-like objects. And English astronomer John Herschel described it as "coarsely scattered clusters of stars". Telescopic observations of the cluster reveal about 80 stars within a field of view of 1.3˚ across. At the cluster's estimated distance of 980 light-years this corresponds to an actual diameter of 25 light-years. The age of the cluster is around 200 million years, while the brightest member star is of magnitude 5.6. In terms of composition, the cluster contains a similar abundance of elements other than hydrogen and helium as the Sun. On August 29, 2006, Messier 7 was used for first light image of the Long Range Reconnaissance Imager (LORRI) telescope on the Pluto-bound New Horizons spacecraft.

While attending the Texas Star Party in May of 2021, I wanted to image the southernmost Messier object. With TSP's lower latitude, it made M7 an easy target. This is also a beautiful star cluster when observed visually. M7 is basically located in the "heart" of the Milky Way, so you can see from the photo the billions of stars around the main cluster. You can view this beautiful object from our northern location if you have a very good southern horizon. It will be only about 11-12˚ altitude, so quite low. Best time would be late spring / early summer. A wide field, low power refractor telescope is basically all you need. Or even a good pair of binoculars will do the job. Imaging will be difficult since it will be right in the thick atmosphere. So next season get out and give it a try. You can then say that you observed the southernmost Messier object. Happy hunting!

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 ZWO2600 color 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

On the night of November 18-19, 2023 it was clear enough to do some imaging. I scheduled a run on 5 comets, a nebula and a galaxy.

First up was Comet 12P/Pons-Brooks. I took about 48 frames at 2 minutes each, but ended up only using about 4 frames for this first image. It is fairly bright to image at around 8th magnitude.

I ended up not using data from 2 comets due to their dimness.

On to NGC 660 for about 3 hours of data, as seen in the lower right of this collage.

Then Messier 78 for 2.5 hours shown in the upper right.

Finally Comets 62P-Tsuchinshen and 103p-Hartley, using only 1 or two frames acquired. 103P was in last months issue with 43 frames stacked on the comet.

All images taken with the 10" f/8 RC and ZWO asi2600mc pro camera, at gain 100, and temp 0C.

-Doug Bock

Presentations

Cranbrook
December 4, 2023

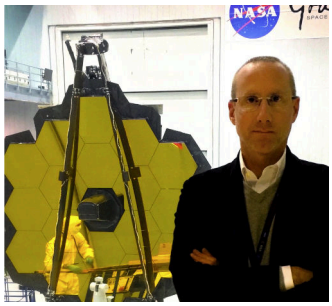
Main Talk

Wavefront Sensing and Control for the James Webb Space Telescope

By.Matthew Lallo

The ground-breaking JWST features a large Optical Telescope Element (OTE) that has been the responsibility of a small team of astronomers and engineers. Years of intensive testing, planning, and team rehearsals paid off in the first few months of 2022, when that group overcame a number of challenges to deploy, align and phase for the first time a telescope like this in orbit, delivered one day ahead of schedule, whose optical performance exceeded both requirements and expectations.
During the ongoing science mission, members of this team regularly monitor and analyze the OTE's imaging performance (i.e. wavefront error) and realign mirrors when necessary. The team also tracks and analyzes micrometeoroid hits on the JWST mirrors

About the Speaker



Matthew Lallo is a Mission Systems Scientist leading the Telescopes Branch at the Space Telescope Science Institute in Baltimore Maryland.

After a B.S. in astronomy, he put graduate work on hold to come to STScI in 1988 to be a part of the team that would enable science with the long-anticipated Hubble Space Telescope. These days Matt is privileged to lead an inspiring team of astronomers and a variety of engineers and scientists responsible for the pointing and imaging performance of the Hubble and James Webb Space Telescopes, and they are already applying their experience to the design of larger more powerful successors.

Over the years, Matt pursued a parallel passion for motorsports. Interestingly, Matt first met Warren Astronomical Society member and astrophotographer extraordinaire Bob Berta not through astronomy but from their ownership of identical carbon-fiber Alfa Romeos.

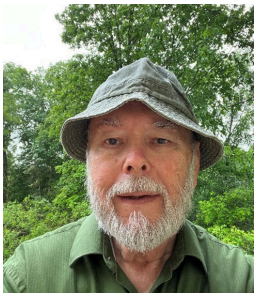
Short talk

Martian Dust and Solar Cells

By Dr. Dale Partin

Using solar cells rather than nuclear generators to power landers and rovers on Mars would save a lot of money. However, Martian dust gradually accumulates on solar cells, blocking sunlight and reducing their output power. Solutions to this problem are considered in this presentation.

About the Speaker



Dr. Partin has been a member of the Warren Astronomical Society since 1998. He has been an officer for many of those years and is currently the First Vice President. He had a career in industrial research. He now teaches astronomy at Macomb Community College and is active as an amateur astronomer.

Awards Banquet
December 11, 2023

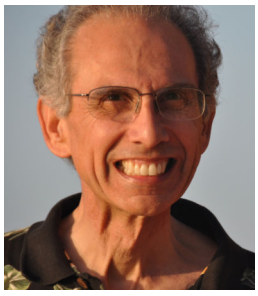
Feature

You're Made of Star Stuff

By Jon Blum

At our WAS banquet, Jon will demonstrate the type of astronomy talks he does at Fox Run. You will see how a presentation for smart seniors who know nothing about astronomy is different from the talks we do at our Warren club meetings designed for those of us with more years of astronomy knowledge, and you will see how these presentations can draw such a large audience every month. There will be several topics included, with the main topic being "You Are Made of Star Stuff" about how the elements in your body came from the stars.

About the Speaker



When he retired from his career as a dermatologist in 2001, Jon Blum's children bought him a telescope so that he would have a hobby to keep him busy. He joined the Warren Astronomical Society and the Ford Amateur Astronomy Club to learn how to use that telescope and to understand what he was looking at in the telescope. He enjoyed his new hobby so much that he later joined seven additional astronomy clubs. Then to make the total a nice round number of ten clubs, two and a half years ago Jon started a new astronomy club at Fox Run, the retirement community in Novi where he currently lives. He gives a one-hour PowerPoint presentation at that club every month, and gets an average attendance of 150 people, even though it only draws from the 1300 people who live in the Fox Run community.

Skyward

David H. Levy

On the fourteenth of October 2023, I witnessed my 99th eclipse. This tally includes everything from barely noticeable penumbral eclipses of the Moon, where one can occasionally distinguish a slight shading of one side of the Moon as it wanders past the Earth's outer shadow, to the dramatic and life-affirming total eclipses of the Sun.

The October eclipse was actually an annular eclipse or "ring" eclipse. The annular phase occurs during which the entire Moon covers the Sun, but because the Moon is near its apogee, or farthest point from the Earth in its orbit, then the Moon is surrounded by a ring of sunlight. I was all set to join the group heading to southern Texas to see the annular eclipse, but last month I was invited to be the keynote speaker at the Homecoming festival at the State University of New York at Plattsburgh. This invitation meant so much to me that I was not about to pass it up. So, I took a big chance, and it paid off.

The night of my lecture was clear and starry. I began the lecture with my own definition of what a university can be. The world is as it is; we can try but, in the end, it is difficult if not impossible to change it. A university, however, at its best represents the world as it can be. For me, this represents the ideal of what a university can accomplish. The case of SUNY Plattsburgh is a specific example of that possibility. The not-too-large student population, understandable relationships among students and faculty, careful and interesting course offerings, and even the Plattsburgh Cardinals sporting program, all help to promote this goal.

But this University offers one thing more. About 40 miles to the south, within the ancient Adirondack mountains, lies their rural campsite called Twin Valleys. As a youngster I attended the Adirondack Science Camp there in what were three of the happiest summers of my life. And for the past 20 years there has been the Adirondack Astronomy Retreat at this magnificent place.

On the eve of the eclipse my friend Ed Guenther and I led a small group of people to observe at our Adirondack Astronomy Retreat site, during which time I did a little comet hunting. The following morning the sky was cloudy but there were plenty of breaks in the clouds so we got a magnificent view of the partial eclipse. We were excited; the crowd was excited, and we thoroughly enjoyed the partial eclipse that lasted about two hours. During this excitement, the solar system continued its inexorable motions, as the Earth, the Moon, and the planets slowly wended their way through space and time.

The photograph shows my little telescope, named Cupid, at SUNY Plattsburgh.

Book Review

By Brad Young, Astronomy Club of Tulsa

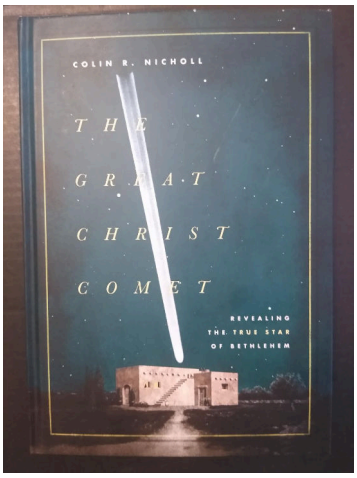
The Great Christ Comet

By Colin R. Nicholl

Introduction

Although this book came out in 2015, I had not seen it until recently. After reading it, I wrote this for several reasons. The public fascination with the Star of Bethlehem is as strong today as perhaps any other point in 2000 years. This is an exceptional book, very well written with a deep well of sources. The care given to providing backup information shows that the author took his time to research deeply on the subject and weed through some of the more dubious ideas. And that is the important takeaway; with the inadequacy of proof that this well-documented, well written treatise on the age-old subject of the Star of Bethlehem again shows that we may never know its true nature, and that's okay. Miracle or mundane alignment, the Star of Bethlehem is more about who it announced than what it is. I have yet to see anyone write a 200-page book about the streetlamp over the plastic sign that said, "Washington's Birthplace 1 mile".

Before the review, full disclosure. I am a Christian, although some of my views don't align perfectly with the normal Protestant theology. However, I have approached this as a literary review of the science subject that needs to stand on its own merit based on facts. I would not pretend to be familiar enough with the Bible to dispute the accuracy or applicability of any of the passages that the author uses, nor get into the endless discussions of translations and modern viewpoints versus ancient ones.

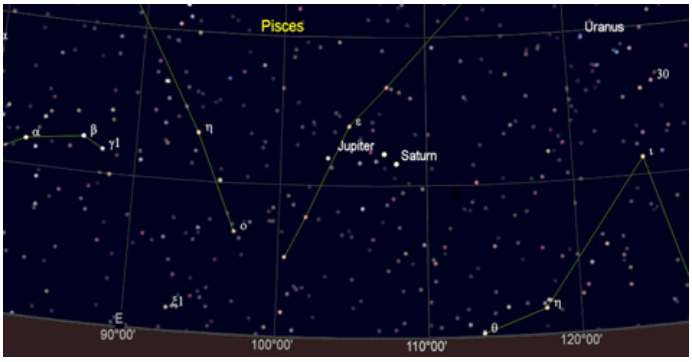


I'm also an amateur astronomer, so I have had the opportunity to see examples of some of the things described in the book as possible candidates for the star. It is an important star from both perspectives, and it stands alone in astronomy as the spotlight on the birthplace of Christ and all its spiritual meanings to millions in two millennia. It's also fascinating, astronomically, to review the beautiful and amazing objects or alignments that may have been responsible for the Star.

Review

"The Great Christ Comet" spends the first three chapters recounting the history and significance of the Star of Bethlehem. The author does a great job of this, providing Biblical accounts with their contemporary meanings and the later spread of the story throughout the 20 centuries since the event. He lists several examples of previous attempts to explain the Star and discusses its impact on Christmas and popular culture.

However, none of this portion was controversial, so my review in detail begins with Chapter 4 "What Star is This?" where Mr. Nicholl presents the previous major hypotheses on his way to stating they are all wrong, and his theory of a comet is the correct answer.



22 Sep 7 BC Jupiter / Saturn conjunction

Hypothesis #1 is the triple conjunction of Jupiter and Saturn in Pisces in 7 BC. There is some astrological meaning to Jupiter as the king of planets and Saturn being associated with the Jewish people. However, this grouping is not considered viable as an explanation because it was not bright enough and is not particularly unusual. Jupiter and Saturn have a triple conjunction every 15 to 16 years.

Hypothesis #2 consists of a series of occultations of Jupiter by the moon in Aries in 6 BC. This is also dismissed as it is not rare and the hiding and then reappearance of the bright star doesn't fit well with the visual impact described in the Bible.

Hypothesis #3 is the sudden appearance of a nova or supernova. Here there is the problem of a lack of records by any of the other civilizations that had a robust astrological interest at the time. The Chinese particularly were well known recorders of new stars, and there is no indication that they recorded one near this time. Other problems with this scenario are that the star was seen moving to different places in the sky whereas a supernova would be fixed. Also, no supernova remnant residue in any part of the electromagnetic spectrum has been found that would match the location and timing.

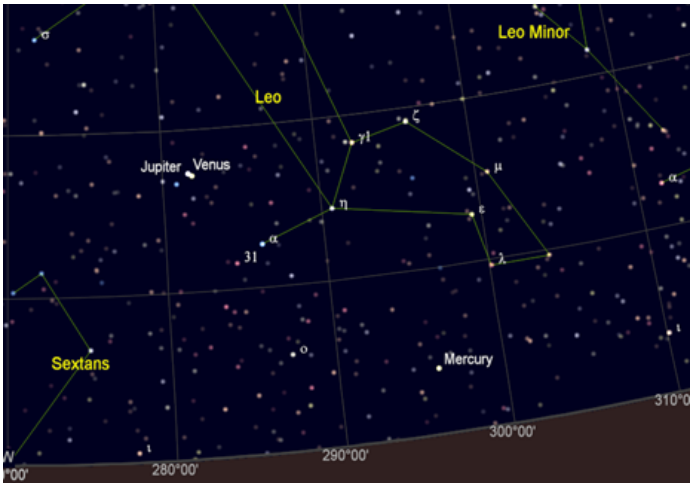
Hypothesis #4 is that of a great meteor storm, and idea first presented by Sir Patrick Caldwell Moore, one of the preeminent astronomers of the 20th century. However, this idea really lacks any support. There would have to be several different meteor storms that would happen at different times to provide the moving object that was recorded. Also, meteor storms were well known if not completely understood at that time and would probably have been recognized as one and described appropriately. No such records have been found.

Hypothesis #5 is relevant mainly in an astrological sense. There is an argument that proposes the star seen to brighten so significantly was Alpha Aquarii, named Sadalmelik by the Arabs, a fixed star in the sky that would have been located suitably at dusk to match some of the descriptions. The main reason for its importance to astrology is that it is the brightest star in the constellation that

will become the apparent place of the Sun at the vernal equinox. You probably remember the song "Age of Aquarius" - that was what the hippies were all yelling about in the lyrics. Unfortunately, that idea didn't take shape until the Medieval period about a thousand years later and won't happen until many years from the present day. It also suffers the same issue of being a fixed star.

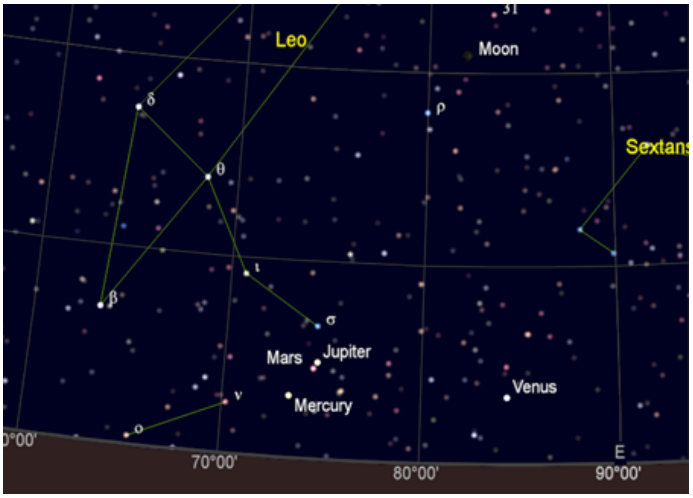
Hypothesis #6 is a hodgepodge, a mix and match of any of the above combined together to provide an explanation. This is easily dismissed since none of the first five ideas have held water and adding them doesn't fix the issues that negate proof.

Hypothesis #7 uses a great year for Jupiter apparitions as its model. In 2 BC, Jupiter had a triple conjunction with Regulus, the brightest star in Leo, and a close conjunction with Venus on June 17th where it might have appeared to be fused into one very bright star.



17 Jun 2 BC Dusk looking WNW

Then on August 27th, 2 BC, a grand grouping of Mercury, Venus, Mars, and Jupiter occurred low in the sunset with Mars and Jupiter particularly close in conjunction.



27 Aug 2 BC Dawn in ENE

There are some historical problems with this one, as Christ is believed to have been born in 5 or 6 BC, not 2 BC, as discussed below.

Herstory in the Stars

In Chapter 5 the author avers that the answer to the Christmas Star of Bethlehem is that it was a Comet, which he calls the Christ Comet. He looks at records of comets of that time, including Halley's Comet, which, appearing in 12 BC, would seem to be too early. So, it must have been another comet, one not known previously or recorded contemporaneously.

Nicholl then spends many pages describing the constellation Virgo, the Virgin. Greco-Roman mythology held this to be Persephone, daughter of Demeter. Perhaps because of the virginity of both women, the constellation was sometimes later re-imagined as Mary.

In his theory, Nicholl sees the Christ Comet brightening tremendously while in retrograde motion, seeming to stall around the stars that make up the belly of the figure of Virgo the Virgin, as depicted on the artistic star charts of pre-modern times. This comet enters her belly from below and then grows larger and brighter, and after attaining maximum size, leaves her belly between her legs. Nicholl explains that this is a celestial representation of the conception and birth of Jesus with the Virgin Mary, his mother, represented by Virgo in the sky. This scenario appears in several areas in the book, and in an alternate discussion around the events in 2 BC it is another wondrous thing that happened to Jupiter, with Jupiter being identified as the Christ Comet, doing the same show in Virgo, with the same meaning.

But there is a critical flaw in proposing the Christ Comet as an event in 2 BC. Most historians agree that King Herod ordered the murder of firstborn sons after the Magi had met with him and asked to see the child, so they might worship him. This act of murderous envy led to the Flight to Egypt by Joseph, Mary, and Jesus. But historians also nearly all maintain that by 2 BC, an old and sick Herod had already abdicated to his sons, preceding his death the next year. This conclusion is based on coinage identified and dated from the time.

Remaining Hypotheses

Hypothesis #8 is that the appearance of a star over Bethlehem was a purely supernatural event that cannot be explained with facts or using the scientific method. Since we can't explain it, we just must accept it as described in the Bible, on faith alone.

Hypothesis #9 is also an accept on faith situation. The story is passed down to us in the Gospel of Matthew and may be at least partly apocryphal. Jesus was born in Bethlehem to the Virgin Mary, and this event is central to the Christian faith. It seems fitting that some sort of magical or important event would announce his birth. Then, as the story was retold, it became more amazing as time passed.

Remaining Discussion

The middle portion of the book reviews the types of objects depicted in the hypotheses, comets, meteors, etc. and does, I must say, a good job of explaining these celestial wonders. If just for this portion, the book is worth a read.

Then, with Chapter 9, "Lo, the Star Appearth", Nicholl goes back to explaining the hypothesis that he feels is correct. Here, most astronomers I think would disagree with his findings, at least in the specifics of what he has selected as the answer, if not the whole idea of it being a comet.

While admitting that there has never been a comet in history as bright as the one proposed as the Bethlehem star here, he states that Sarabat's comet, was as bright as magnitude - 6, and the recent Hale-Bopp, at magnitude - 2.7, have been stunningly bright. There have been many sun grazers visible in the daytime sky that may have hit -8 or so. But by his own calculations, the Bethlehem comet would have had to have had an absolute magnitude of nearly -20

and an apparent magnitude of as much as -17 (the sun is magnitude -24), while sufficiently far from the sun to be seen in twilight. He even titles one of his subsections later in the book "Unprecedented Absolute Magnitude".

Here again the lack of any records from the Chinese, Aztec, or other civilizations for such a bright object that appeared, fell to the sun, and then reappeared over a period of months is telling. But the author downplays this, stating that some records are inevitably lost.

The next section is devoted to determining the orbit that would match the sightings as described in the Bible. For this, he enlisted Gary Kronk, a comet discoverer and observer, to help him with the technical details. The orbit that is derived does seem to match the comings and goings of the comet, and they do provide orbital elements and sufficient technical details that any amateur astronomer could use the information to plot the orbit and its path of the sky on their computer using readily available astronomy software. I did this and noticed that modeled motion matched well but that in perihelion passage and its closest approach to earth, the geometry of its appearance in the sky was poor, with the comet tending to hug close to the Sun at its brightest portion of the appearance. Although I don't see that problem stated in the book, this may be the reason why the comet is required to be amazingly intrinsically bright.

The next section is a curious almost day by day description of the course of the Christ Comet through the sky. This is the part where the very bright magnitudes are presented and the retrograde motion back to Virgo, with a stationary point met at her "belly" on October 6th, and birth occurring soon thereafter. If you are familiar with the precession of the equinoxes, you will know that 2,000 years ago, the location of the equinox we now see in Virgo was much further east, almost exactly where the author located this stellar depiction of the conception and birth of Jesus. He states that it reaches its highest point in the predawn sky at 23 and a half degrees west of the Sun, on October 14th, 6 BC, and the baby Jesus (the comet) is seen fully delivered from its mother on October 20th between 80 and Lambda Virginis. With precession considered, this would put this major event at no more than 15˚ up in the eastern sky.

Admittedly, for the northern hemisphere, the pre-dawn sky of October allows objects along the ecliptic to be seen near the Sun. This assumes that the comet is low inclination (the author chose 2˚ for his orbit). Most very bright comets are one-time visitors from the Oort cloud and can approach from any direction and inclination. To require this comet to be low inclination, the brightest ever seen by man, and specifically timed to present a celestial movie of the birth of Christ starring the imaginary characters we've drawn in the sky seems, to me, to be relying on an awful lot of coincidences.

The author concludes that his comet theory is the best of all the choices. He adds an appendix discussing the Chinese comment records, and the lack of a records of this brightest comet ever seen. Then he presents a very well-documented bibliography, a useful glossary, and an index. Footnotes proliferate and appear on the appropriate page throughout the book. This listing of sources, explanation of terms, and even an additional listing of the Christmas carols that he used for part of his background material, are the reason I stated it is such a well-documented book. And again, it is stocked with great photos and graphics, and has a wonderful picture on the cover of the book, which is very well bound, typeset with a easily legible font.

But unfortunately, I'm not buying his theory. Nicholl concludes that a few people in and around Mesopotamia and Israel were the only people on Earth who saw this Star, which has now in his book become an enormous comet, perhaps the brightest ever seen (or not, if you weren't in the Holy Land). It is described as having a tail that reached the zenith, which would seem to have led the Gospels to list it has a comet, not a star. Also, the comet was perfectly placed to not only arrive at the time of Christ's birth, but also to act out in its path a shadow play of the conception and birth of the Savior is just too far a stretch for me. The data that he uses is all traceable and well sourced, but the conclusion seems as miraculous as just saying that it was a miracle. There is no compelling reason for me, after reading the book, to leave off the idea that there was an appearance of a bright object to a few people, and that we may never understand what it was.

Taken on faith, the Christmas Star makes sense. It's a symbol, showing the importance of Christ's birth, and plays a central role in the story of the Magi. Faith is not proof on a scientific basis; we may never have facts that lead to an indisputable answer. I appreciate the author of the book trying to prove the story, but I don't think he did, and that's okay.

Diagrams by author using Cartes du Ciel

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More Book Reviews

By Ed Bas

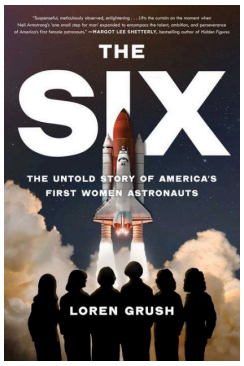
The Six:

The Untold Story of America's First Women Astronauts

By Loren Grush

A 400-page book told about this hidden story– with full color pictures and no footnotes! Yay!

We needed that. No backhand chirpy NASA officials, that's another advantage for this book. Men are always astronauts– if you are living in the 1960's. This book is a triumph and a celebration to the female astronauts.



One example: Rhea Seddon was to be the first mother to fly in space– Americans, Russians, or on this planet. In 1983, she was beckoned to a NASA office. She was asked, "I was wondering if you'd like to fly on (the Discovery space shuttle) next year?" She answered, "Yes, sir!" Courage and chutzpah to be launched. She was the one of the pair, unannounced space-walkers to be placed in the position to save a dying satellite.

Judy Resnik: "I don't want to be a Jewish astronaut. I don't want to be a Jewish woman astronaut. I just want to be an astronaut, period." Should be one of those famous quotes!

She was the second American female astronaut. She died in the Challenger explosion, 1986. She was only 36 years old.

Sally Ride. Wow! Everybody knows her name. Like "Cheers" theme song! She was in the first top 10 of the Astronauts Hall of Fame, in my mind. She was the first American woman to fly in space. Sally was ready to play professional tennis, but she picked science. I played tennis, too. Athlete and a brilliant mind, science was lucky. She was first known to be the LGBTQ astronaut. And, on her podium (she was a member of investigating the fatal Challenger explosion), she bravely told Congress, NASA and its contractors: shame on you! It turned the tide: more tests, more diligence, and more safety, thank god! Sorry, she died earlier; she was only 61 years old, not a rocket accident but she died from pancreatic cancer.

That reminds me of Carl Sagan. He died, almost the same age, from cancer also. Resnik, Ride… we are sorry, so sorry.

Elon Musk

By Walter Isaacson

Fantastic! I am still reading into the 600-pages plus. I can say, You should read it! Absolutely, no doubt about it. It's a great book and the subject is a brilliant man.

Yes, I am a Musk fan. Who doesn't? "Less than eight years from its founding, and two years from facing bankruptcy, it was now the most successful private rocket company in the world."

If you can't afford this book, borrow it or steal it. I mean it!

It was a bit tedious trying to read this thick book, 670 pages, on one subject. Don't be! The author had a legible, readable book, with short, edible chapters and without science/governments awkward abbreviations. It has plenty of photos, of course, and no footnotes! I read this book, one third and within one week. It's a roller coaster reading.

This author wrote da Vinci, Steve Jobs, Einstein, Ben Franklin and other bios also. This book includes a 30-page, exhaustive but helpful, index. The readers will like that, and me, too! He had a few handy pages including sources and notes.

One photo and one chapter are Musk and Bezos. The subject is, of course, SpaceX. Both agreed they had a "childhood addict of science fiction, racing through the shelves of Isaac Asimov and Robert Heinlein…" Yay!

Musk can be tough. Musk can be ice cold, in his friends, relatives and, well, people. He had a soft side: he ordered 500 dozen roses for Talulah, his to-be second wife. Yes, he can be eccentric, like Jobs, like more billionaires, but not crazy like Howard Hughes. "They can be reckless, cringeworthy, sometimes even toxic. They can also be crazy. Crazy enough to think they can change the world."

Musk erected a tent in the roof over his Tesla factory. Because he worked later, that's why. He worked and slept in his office also. How many billionaires do you know working overtime?! "When he is in the darkest of places, he often cycles between anger and cackling laughter. His humor has many levels." And "Musk's goofy mode is the flip side of his demon mode."

Musk: …"I'm sending people to Mars in a rocket ship." SNL, 2021.

Don't miss the chapter Starship, and the Big F Rocket.

I can say, you skip chapters about founding PayPal and Tesla but DON'T! It has a long story and it was a rocket launch– literally– I was watching a video of the SpaceX rocket in the Kennedy Space Launch on November 12. SpaceX was a baby born from Musk.

Musk was awarded a $1.6 billion contract from Uncle Sam. "I love NASA," Musk said. "Then he changed his password for his computer login to 'ilovenasa'."

If I graded a 0-4 stars, this book is a 5! Do I recommend it? You betcha!

Over the Moon

with Rik Hill

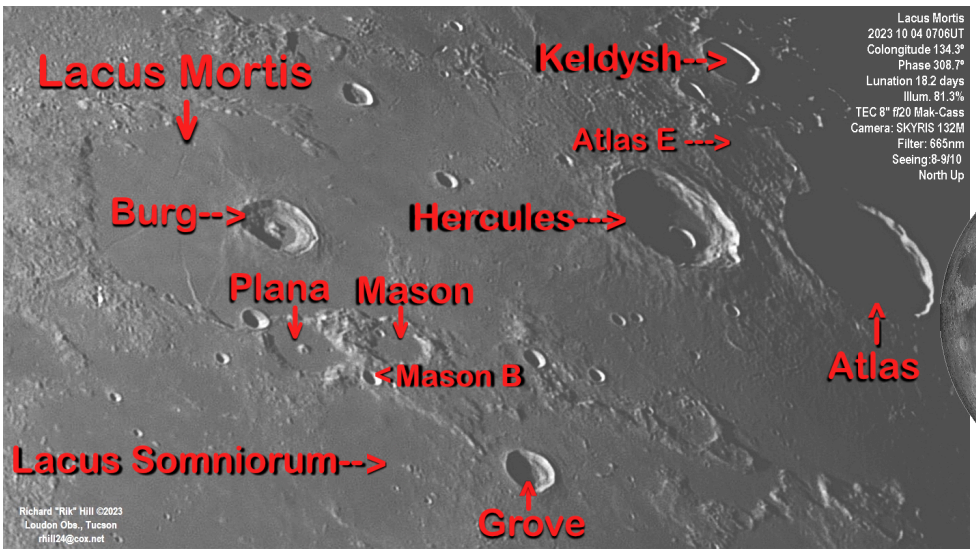
Lacus Mortis and Burg

The region of Lacus Mortis (left of center) is the hexagonal plain with the nearly central crater Burg (41km dia.) that has a valley dividing its central peak in two, surrounded by nice hummocky terrain for another 40km or so. There are some interesting rimae (what we used to call "rilles") around the Lacus starting at the 8 O'clock position from Burg where there is a shear fault that points to the north from the rim of the Lacus. Moving up from there is a graben that extends out to the north of Burg. Then above Burg is a short rima only about 25-30km long, that appears to be a catena formed from impact debris. probably from the Burg impact since it is the youngest in the area, being of Copernican age (1.1 billion years ago to present).

Below Burg are a pair of craters, the flat floored or flooded crater Plana (42km) and to the right of it is a smaller flat floored crater Mason. Between them and below (south) is the crater Mason B, a very fresh crater as is the small unnamed 3km crater below and to the right of it. About 20-25km below Mason B on the plain of Lacus Somniorum, is a low isolated dome. Moving further south you come to the crater Grove (29km) at the bottom of this image. Due east of Burg (right) are the two large craters. The nearest being Hercules (68km) with the large Hercules G (13km) crater on its floor. Then deep in evening shadow further east is Atlas. These two craters are more familiar to the amateur observer as two of the more identifiable features in the waxing crescent moon.

Notice above Atlas there is the hint of a crater outline. This is Atlas E (59km), very ancient possibly pre-Imbrian, and deeply overlain by ejecta from both Atlas and Hercules. Further north you can just make out Keldysh (33km) almost completely in the night's shadow.

This image was made from portions of two 1800 frame AVIs stacked with AVIStack2 and knitted together with MS ICE. Final processing was done with GIMP and IrfanView.



Location Maps by Ralph DeCew

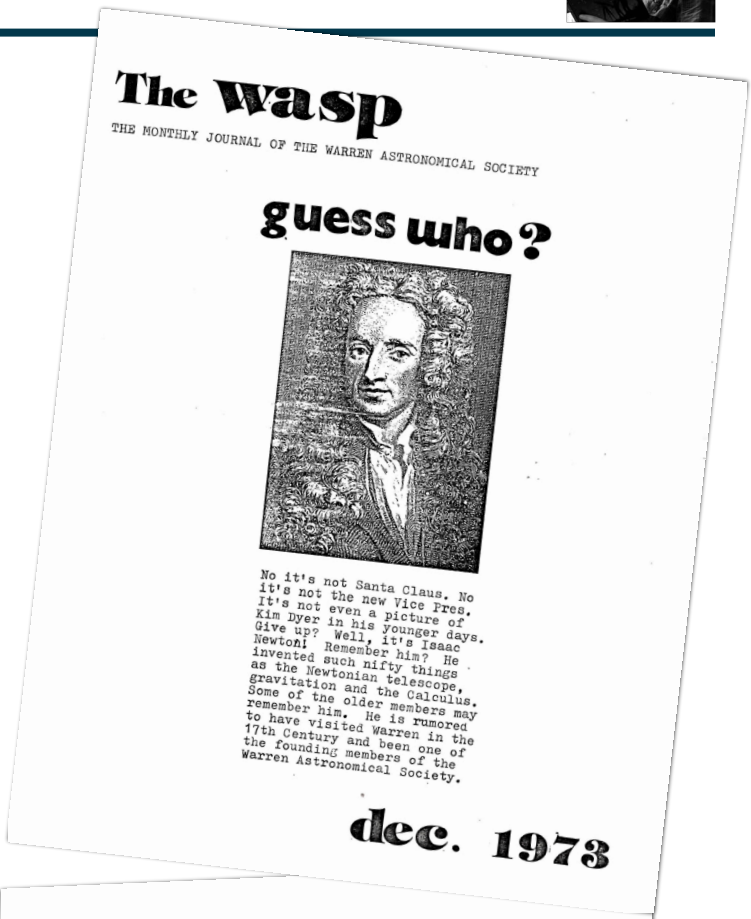
History S.I.G.

December 1973

The Christmas tie-in for the cover of this issue is based on Isaac Newton's birthday (Julian Calendar). Go ahead, look it up. Inside, we get local news of Cranbrook, Comet Kohoutek observing, and a Mercury transit by Ken Wilson. Some hand wringing by the Editor follows (Light pollution, anyone?)

A report by Frank McCullough on observing Kohoutek follows in "Observational Astronomy" (plus, spotting Zodiacal Light.) Next up is "Mercury Transit or Bust" by Diane McCullough along with some reprints (sources unknown): "Tales of a Comet", "Venus", and "Titan Has Smog?"

Dave Harrington finishes the issue with "Observations of the Transit of Mercury From North Carolina."



The Wasp

THE MONTHLY JOURNAL OF THE WARREN ASTRONOMICAL SOCIETY

guess who?

No it's not Santa Claus. No it's not the new Vice Pres. It's not even a picture of Kim Dyer in his younger days. Give up? Well, it's Isaac Newton! Remember him? He invented such nifty things as the Newtonian telescope, gravitation and the Calculus. Some of the older members may remember him. He is rumored to have visited Warren in the 17th Century and been one of the founding members of the Warren Astronomical Society.

dec. 1973

December 2003

Astro Chatter by Larry Kalinowski is the standard start to these issues in the early 2000s. Mostly club news (and the upcoming Annual Banquet- not too late to get your tickets for this year's, just send $35 by PayPal to treasurer@warrenastro.org or check for same to PO Box 1505, Warren, MI 48090-1505). A lunar eclipse was the big news.

Finishing the issue, "The SwapShop" by Larry Kalinowski and NASA's contribution, "Stardust" which was the comet sampling mission to Wild 2.

From the Scanning Room

This round of revisiting archived issues has proven interesting (in the Chinese curse sense of the word). In selecting the issues, I noticed that there was a December issue from way back in 1973, I thought I'd run out of the really old issues. Going down my listing, I found another December issue on a decade year (I like to select at least a decade or two apart, this went a full three.

I knew I had a scan to do concerning the Dec. 2003 issue since I had a physical copy from the Jim Shedlowsky collection and the PDF online was yet another reduced size copy (see last month's column). Fair enough, I have a template now and re-creating the newsletter is easily and quickly done. So… a week later, I had my copy to upload…Life gets in the way and we're getting into the busy with family season, right? All set with 2003, I prepared to get 1973 written up- and, discovered, no PDF online! Apparently, November and December of 1973 failed to get uploaded when the PDFs were produced. So, before I could finish this column, I had to make sure that there were copies for perusal in place. A chief scanner's work is never done.

Dale Thieme,
Chief scanner

The W.A.S.P. newsletter

December 2003

The Warren Astronomical Society Paper

P.O. Box 1505
Warren, Michigan 48090-1505
www.boonhill.net/was

Volume 35, Number 12 // December 2003

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Astro Chatter
by Larry Kalinowski

There's only going to be one meeting for the WAS this month, because the third Thursday (Dec. 18) will be used to present our yearly 2003 Awards Banquet. If you haven't yet signed up and paid the $21.00 required for each person to attend, you're going to miss out on a lot of entertainment. Get your entrance fee paid by the second week in December or you won't get in. The banquet is being held at DeCarlo's Banquet Hall (formerly The Warren Chateau), on Ten Mile Rd., just east of Mound Rd. Food is usually served about 8:00 PM but I advise you to get there an hour early to partake of heavenly spirits, appetizers and vigorous hand shaking. That'll allow you some time to examine the table of raffle prizes that we get donated from astronomical vendors all around the country and purchase those tickets required for the prizes and the 50-50 raffle. There's also a prominent speaker for the evening. Thanks to Ken Bertin, our featured speaker will be Dr. Therese A. Kucera of The Goddard Space Flight Center. Dr Kucera is a solar astrophysicist. You'll have a chance to see the old officers depart (happily or otherwise) and the new officers with their shinning faces.

Finally, there's the awards ceremony. Hard workers and upcoming observers are rewarded for their efforts. Let's see if you agree with the award presenters. Send your registration check to The Warren Astronomical Society, P.O. Box 1505, Warren, MI 48090-1505. Bob Watt, our secretary elect for 2004, has informed me that some donated prizes have already arrived. A 12X18, hardcover, rotating, glow-in-the-dark, star finder, with 10 heavy pages depicting the sky and celestial objects to observe, by season. A red dot finder, that mounts on your telescope, a SuperCircuits, color, CCD, video camera, A Starry Night Demo program, and best of all, one copy each of the north and south versions of The program Real Sky. By the way, if you have anything to donate for the raffle prizes, like books, astronomical games, computer programs, useable hardware like finder-scopes and eyepieces, this is your chance to unload those items and clean out your closets. Give them to someone that will put them to good use and I hope you walk out the door that night with a prize in your hand.

They're back again. The two giant sunspots that stirred up electrical problems and Aurora have made it back around the Sun and are reported to be unscathed by the trip. Thanks to a call from Bill Whitney on November 19, I was able to get another peek at those spots the following day, this time with a

CRANBROOK INSTITUTE OF SCIENCE

Michigan's Museum of Natural History

DECEMBER 2023

Notable Sky Happenings

Dec. 1 - 7

Moon is to the left of Pollux and Castor is to the right (WSW predawn), plus Venus is to the left of Spica (ESE predawn) on the 1st. The Moon is at the upper left of Regulus on the 4th (S predawn).

Dec. 8 - 14

The Moon is to the right of Venus on the 9th (SE predawn). The Geminid Meteor Shower peaks the night of the 13th and continues into the morning of the 14th. It averages about 60 meteors per hour.

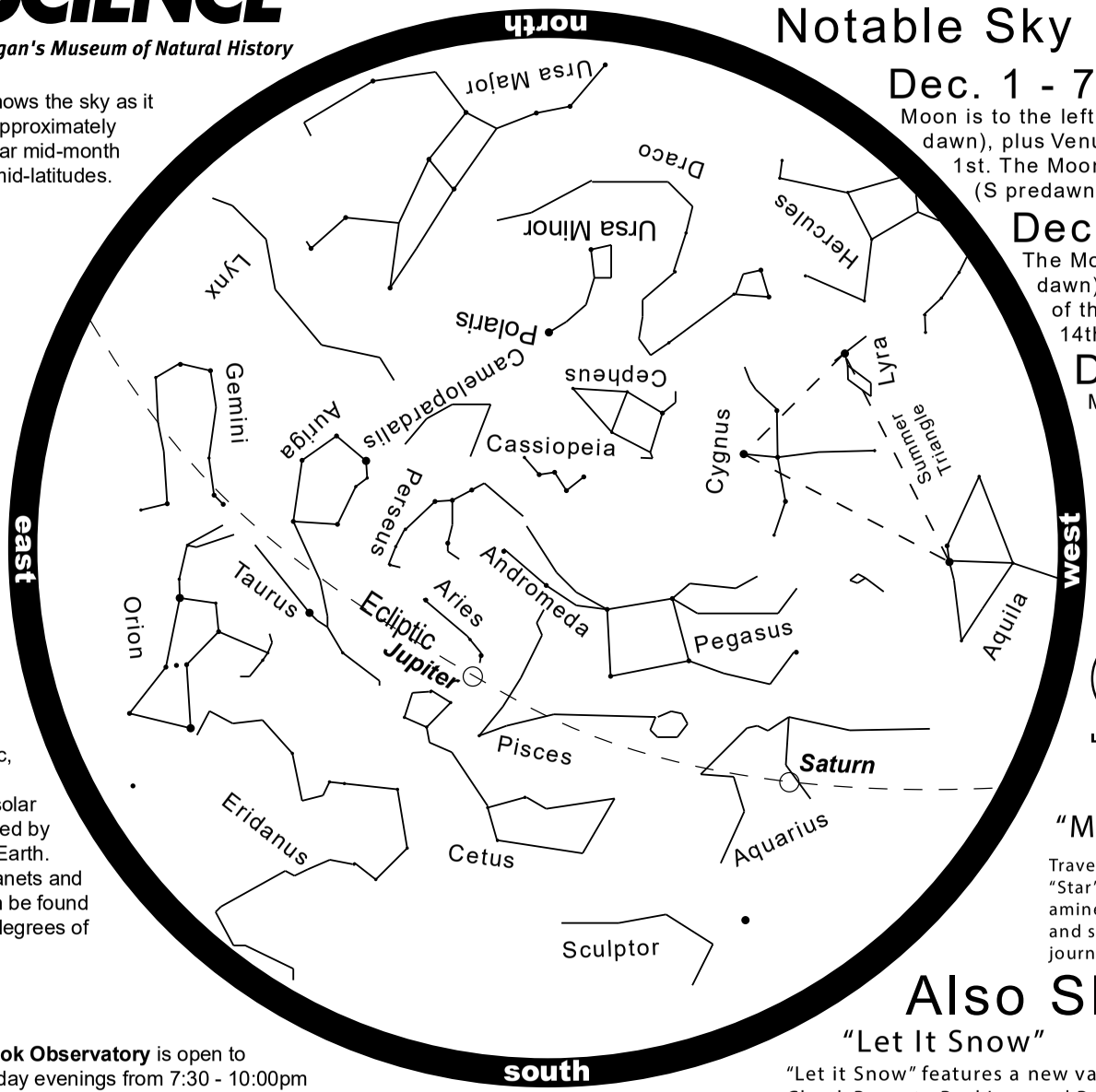
Dec. 15 - 21

Moon is below and to the left of Saturn on the 17th (SW evening). Winter begins for the N. Hemisphere at 10:27pm EST on the 21st.

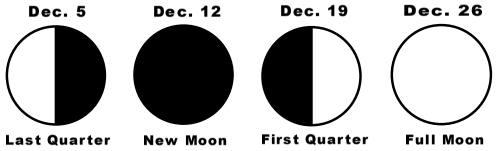
Dec. 22 - 31

The Moon is above and to the left of Aldebaran on the 24th (E evening), then below Pollux with Castor above on the 28th (ENE evening), then above Regulus on the 31st (SW predawn).

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



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.



Now Showing

"Mystery of the Christmas Star"

Travel back in time 2,000 years to explore the nature of the "Star" that guided the wise men to Bethlehem. We will examine astronomical events that were occurring at the time and see if any were remarkable enough to have sparked the journey. (Extra shows are presented during the holidays.)

Also Showing

"Let It Snow"

"Let it Snow" features a new variety of festive classics from Frank Sinatra and Chuck Berry to Burl Ives and Brenda Lee, and includes a finale by the Trans Siberian Orchestra. The soundtrack is visually enhanced with thematic animation and all-dome scenery. This 32-minute program is a fun and entertaining experience for all ages, especially families.

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/explore/observatory

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

Mike Young - Faint Milky Way between the trees, from Ludington

December 2023

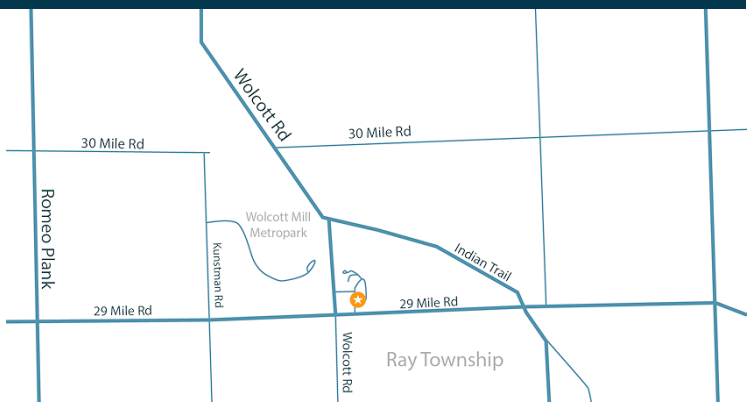
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4 Cranbrook Moon at Apogee: 404348 km	5	6	7	8 Hanakkah begins	9
10	11 Awards Banquet	12 NEW MOON	13	14	15	16 Moon at Perigee: 367900 km
17	18	19	20	21 Winter Solstice	22	23 Stargate Open House
24	25 Christmas	26 FULL MOON Kwanzaa begins Boxing day (Can)	27	28	29	30
31 New Year's Eve						

Stargate Observatory

Monthly Free Astronomy Open House and Star Party
8:00 PM, 4th Saturday of the Month
Wolcott Mill Park - Camp Rotary Entrance

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

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



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

Observatory Rules:

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

Stargate Report

November Open House

Riyad opened the observatory under cloudy skies, he reports about 10 people in attendance. They observed the Moon before wrapping up around 10pm

December Open House

Saturday December 23rd, 6:00 pm

Jeff MacLeod,
Observatory Chair

Treasury Report

Treasurer's Report for November 30, 2023

BOA account:

Balance:..... $25,188.44

Received:..... 80.00

Expense 0.00

PayPal Account:

Balance:..... $586.14

Received:..... 475.85

Paid 15.65

(Postage)

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 December 2023

Add one hour for Daylight Saving Time

Source:

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

Date	Time (h:m)	Event
3	19:38	Regulus 4.0°S of Moon
4	9:00	Mercury at Greatest Elong: 21.3°E
4	13:42	Moon at Apogee: 404348 km
5	0:49	LAST QUARTER MOON
8	9:05	Spica 2.3°S of Moon
8	10:24	Moon at Descending Node
9	11:53	Venus 3.6°N of Moon
12	18:32	NEW MOON
14	00:18	Mercury 4.4°N of Moon
14	14:00	Geminid Meteor Shower
16	13:53	Moon at Perigee: 367900 km
17	16:58	Saturn 2.5°N of Moon
19	13:39	FIRST QUARTER MOON
20	12:00	Mercury at Perihelion
21	8:54	Moon at Ascending Node
21	22:28	Winter Solstice
22	9:20	Jupiter 2.6°S of Moon
22	14:00	Mercury at Inferior Conjunction
22	22:00	Ursid Meteor Shower
24	2:37	Pleiades 1.1°N of Moon
26	19:33	FULL MOON
28	6:51	Pollux 1.7°N of Moon
31	3:52	Regulus 3.8°S of Moon

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.

Meeting Minutes

WARREN ASTRONOMICAL SOCIETY

NOVEMBER BOARD MEETING (VIRTUAL)

OCTOBER 30, 2023 7:00PM

Meeting called to order at 7:02 PM. Officers present: President Bob Trembley, 1st VP Dale Partin, 2nd VP Jeff MacLeod, Secretary Mark Kedzior, Publications Chair Dale Thieme (quorum present).

CLOSED SESSION – Discussion on Service Awards.

WAS Elections – November 6, 2023 – 7:30 PM. Nominating Committee Chair Mark Kedzior reports on candidates willing to run for board positions:

PRESIDENT – Bob Trembley 1st VP – Dale Partin 2nd VP – Riyad Matti

OUTREACH CHAIR – Jeff MacLeod - There are still vacancies and no candidates for the offices of Secretary, Treasurer and Publications. Membership will be solicited again before Cranbrook meeting when elections take place.

OFFICER REPORTS

Discussion on Metroparks events & publicity – Bob Trembley will contact Metroparks to see if they can post our Open House nights on their monthly calendar of events page to help increase our attendance from the public attending our monthly event.

1st VP Dale Partin reports that there is a need for short presentations for 2024 WAS meeting dates.

2nd VP Jeff MacLeod gave Stargate report regarding the cleanup/reorganization of the Dob Shed (after the removal of the wasp globe) and the addition of two Dob bases constructed by Mark Kedzior so two Meade 8" reflectors could be circulated as loaner telescopes. He also reports that the Dob Trailer will not be accessible to transport the Big Dob due to the clean out of surplus astronomy equipment that is being stored in it until the board decides what to do with said equipment/items. Discussion took place. Motion by Dale Partin to price excess items(telescopes)to go and post to sell – second by Dale Thieme. Motion passed.

Treasurer report (by Dale Thieme) – approximately $25,000 in WAS account, PayPal $125 (from incoming 2024 WAS calendar purchases and banquet ticket sales. He also reports the WAS has 109 paid members and family.

Secretary Mark Kedzior reports on receipt of WAS Banquet door prizes from vendors solicited in mailing in October (Oberwerk and Protostar).

Outreach – Bob Trembley read report submitted by Kevin McLaughlin.

Publications Chair Dale Thieme reports 20 2024 WAS calendars have been sold (30 to go) – eleven banquet tickets have been sold so far – he has our supply of name tags and has made the latest batch for new members and those who did not receive one.

OLD BUSINESS

Discussion on WAS Promo Video -work on WAS logo needs to be done to finish video to post. Discussion on Stargate entry hazards (ramps to enter observatory). Discussion on WAS Library – no update on status of move from Jonathan and Diane's residence to Marty Kunz. Discussion on MCC Paul Strong Scholarship – Dale Partin will coordinate with Macomb for info on fund transfer and the scholarship candidates' selection process. Macomb meeting dates for 2024 – Dale Partin will book room E208 for our Macomb meeting dates for 2024. He reports that the July 8th Cranbrook meeting will be a combined WAS/Michigan Mineralogical Society meeting, with a presentation by the MMS. WAS Logo Apparel Discussion – Mark Kedzior reports that the price list/ordering instructions for WAS Apparel will be posted in each month's issue of the WASP. Discussion on purchase/status of second WAS laptop for Stargate (previously approved by board at earlier meeting).

NEW BUSINESS

Discussion on the April 1st Cranbrook meeting – this meeting will be a social meeting only with NO ZOOM or YOUTUBE. Dale Partin reported on an event being held at Selfridge ANG Base on June 8-9, 2024, and an opportunity to participate to promote the WAS at this event. More details to follow.

Motion by Mark Kedzior to adjourn meeting – second by Dale Partin.

Meeting adjourned at 7:57 PM.

Respectfully submitted,

Mark Kedzior
Secretary, WAS

WARREN ASTRONOMICAL SOCIETY

CRANBROOK (Hybrid) MEETING

NOVEMBER 6, 2023 7:00PM

Meeting called to order for Cranbrook hybrid meeting at 7:00PM by President Bob Trembley. Persons in attendance: 25 - Zoom - 8 & YouTube – 4 @ 8:00PM).

Meeting began with introduction of persons in attendance, followed by officer reports. A brief "In the News" was presented by Bob Trembley. No reports from Special Interest Groups.

OBSERVING REPORTS

G.M. Ross reported on solar activity, followed by Bob Trembley posting the latest SOHO images from NASA on solar activity.

WAS ANNUAL ELECTION OF OFFICERS OF EXECUTIVE BOARD FOR 2024:

Nominating Committee Chairperson Mark Kedzior called the election to order at 7:30 PM EST. Mark highlighted the bylaws in regard to the election and qualifications

of individuals seeking office, term of office, duties and responsibilities of each elected office, and explained tonight's election background and procedures (per Roberts' Rules of Order).

NOMINATIONS FOR OFFICE OF PRESIDENT: The Nominating Committee received the name of BOB TREMBLEY to run for office of PRESIDENT (Bob confirmed he was willing to run for said office). After asking for nominations from the floor three times, and, with no other nominations being received, the presiding chair of the election closed nominations from the floor, and, by virtue of his nomination being uncontested, BOB TREMBLEY is elected PRESIDENT of the WARREN ASTRONOMICAL SOCIETY by ACCLAMATION! (applause from audience).

NOMINATIONS FOR OFFICE OF 1st VP/PROGRAM CHAIR: The Nominating Committee received the name of DALE PARTIN to run for office of 1ST VP/PROGRAM CHAIR (Dale confirmed he was willing to run for said office). After asking for nominations from the floor three times, and, with no other nominations being received, the presiding chair of the election closed nominations from the floor, and, by virtue of his nomination being uncontested, DALE PARTIN is elected 1ST VP/PROGRAM CHAIR of the WARREN ASTRONOMICAL SOCIETY by ACCLAMATION! (applause from audience).

NOMINATIONS FOR OFFICE OF 2nd VP/OBSERVATORY CHAIR: The Nominating Committee received the name of RIYAD MATTI to run for office of 2nd VP/OBSERVATORY CHAIR (Riyad confirmed he was willing to run for said office). After asking for nominations from the floor three times, and, with no other nominations being received, the presiding chair of the election closed nominations from the floor, and, by virtue of his nomination being uncontested, RIYAD MATTI is elected 2nd VP/OBSERVATORY CHAIR of the WARREN ASTRONOMICAL SOCIETY by ACCLAMATION! (applause from audience).

NOMINATIONS FOR OFFICE OF SECRETARY: The Nominating Committee has NOT received any names of individuals willing to run for the office of SECRETARY. After asking for nominations from the floor for the office of SECRETARY three times, the presiding officer of the election closed nominations from the floor, and, with no nominations coming from the floor, the office of SECRETARY is VACANT until one is willing to volunteer or be appointed to the position.

NOMINATIONS FOR OFFICE OF TREASURER: The Nominating Committee has NOT received any names of individuals willing to run for the office of Treasurer. Nominations from the floor – DAVE BARANSKI raised hand and is willing to run for office of TREASURER – nominations from the floor were then asked three times, and, with no other nominations from the floor, the presiding officer of the election closed nominations from the floor, and, by virtue of his nomination being uncontested, DAVE BARANSKI is elected TREASURER of the WARREN ASTRONOMICAL SOCIETY by ACCLAMATION! (applause from audience).

NOMINATIONS FOR OFFICE OF OUTREACH DIRECTOR: The Nominating Committee received the name of JEFF MACLEOD to run for office of OUTREACH DIRECTOR (Jeff confirmed he was willing to run for said office). After asking for nominations from the floor three times, and, with no other nominations being received, the presiding chair of the election closed nominations from the floor, and, by virtue of his nomination being uncontested, JEFF MACLEOD is elected OUTREACH DIRECTOR of the WARREN ASTRONOMICAL SOCIETY by ACCLAMATION! (applause from audience).

NOMINATIONS FOR OFFICE OF PUBLICATIONS DIRECTOR: The Nominating Committee has NOT received any names of individuals willing to run for the office of Treasurer. Nominations from the floor – Dale Partin nominated VATSHALYA DANDIBHOTLA (Vatshalya confirmed she was willing to run for said office) – nominations from the floor were then asked three times, and, with no other nominations from the floor, the presiding officer of the election closed nominations from the floor, and, by virtue of her nomination being uncontested, VATSHALYA DANDIBHOTLA is elected PUBLICATIONS DIRECTOR of the WARREN ASTRONOMICAL SOCIETY by ACCLAMATION! (applause from audience).

CONGRATULATIONS TO THE NEWLY ELECTED OFFICERS OF THE 2024 WARREN ASTRONOMICAL SOCIETY!!

CALL FOR MOTION TO ADJOURN ELECTION: Motion by Dale Thieme -second by Adrian Bradley to close and adjourn election – motion passed.

Election of the Warren Astronomical Society 2024 Board of Directors closed and adjourned at 7:45 PM EST.

Respectfully submitted,

Mark Kedzior
Secretary, WAS
Nominating Committee Chair &
Presiding Chair of Election

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.

MAIN PRESENTATION:

Former WAS President/"Greatest Observer in Michigan" (and driving in from Grand Rapids area), Gary M. Ross, along with Clayton V. Carey, presented "Mercury Before Mariner X". Gary and Clayton did extensive research in obtaining historical data and visual observational reports from the earliest astronomers up until the 1960's, noting that observing the planet closest to our sun creates challenging and limited opportunities to examine surface details with ground-based telescopes, and provided drawings of what these observers saw when observing Mercury. Then along came Mariner X, which provided the answers to the many questions observers had about the surface features of this planet.

Questions and discussion followed his "If you weren't here, you missed it" presentation. The meeting ended at 9:00 PM.

Respectfully submitted,

Mark Kedzior
Secretary, WAS

WARREN ASTRONOMICAL SOCIETY

MACOMB(Hybrid)MEETING

NOVEMBER 16, 2023 7:00PM

Meeting called to order at 7:00 PM at Macomb, Room E208, by President Bob Trembley. Attendance – 12 – Zoom – 8 & YouTube – ? @ 8:00PM.

The meeting began with introductions of members/visitors in attendance.

GENERAL ANNOUNCEMENTS:

Bob Trembley announced information regarding purchase of WAS Awards Banquet tickets for Monday, December 11th, 2023, at the Ukrainian Cultural Center in Warren – he also read the selection of menu items to be served at our dinner (menu & ticket info can be found in the November issue of the WASP). Bob also announced the election results for the 2024 WAS Board – there is still a vacancy for the office of Secretary and is seeking a volunteer to accept this position. Officer reports were given by those present at meeting or on Zoom.

Bob Trembley provided the latest "In the News" info and asked for any observing reports from those in attendance and those on Zoom (none given). David Levy (from Arizona) Gave his Thanksgiving Day wishes to all and read a poem on the Leonid Meteor Shower that takes place in November.

MAIN PRESENTATION:

2nd VP/Observatory Chair Jeff MacLeod and his presentation of the "Gemini Simulator". Jeff presented the history of all Gemini flights in the NASA Space Program, showed the differences between the Mercury, Gemini and Apollo spacecraft, and provided his 1:16(maybe 1:32?) scale 3D printed model of the Gemini capsule along with booster rocket to show to audience. Part two of his presentation took us on his journey in constructing his Gemini Simulator, beginning with the cab from a Chevy S-10 pickup and how he constructed and designed the interior where one can sit and be at the controls to get a "feeling" of what it was like piloting this capsule. He is able to transport (via his specially designed trailer) the simulator to many outreach events in the Michigan area (it definitely is "one of a kind"). During and after his presentation, he fielded many questions about not only the construction of his simulator, but of the Gemini space capsule and how it maneuvered differently than that of the Mercury and Apollo spacecraft . To see his presentation in its entirety, go to:

https://www.youtube.com/warrenastro

The meeting ended at 9:15 PM.

Respectfully submitted,

Mark Kedzior
Secretary, WAS

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

We'd like to see your photos and articles in the W.A.S.P. Your contribution is ESSENTIAL! —
This is YOUR publication!
Send items to: publications@warrenastro.org
Documents can be submitted in Microsoft Word (.doc or .docx), Open Office (.ods), or Text (.txt) formats, or put into the body of an email. Photos can be embedded in the document or attached to the email and should be under 2MB in size. Please include a caption for your photos, along with dates taken, and the way you'd like your name to appear.

The Warren Astronomical Society is a proud member of the

Great Lakes Association of Astronomy Clubs

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

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

Club and Society Newsletters

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

WAS Member Websites

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

Jon Blum: Astronomy at JonRosie

Doug Bock:

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

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

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

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

Bob Trembley:

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

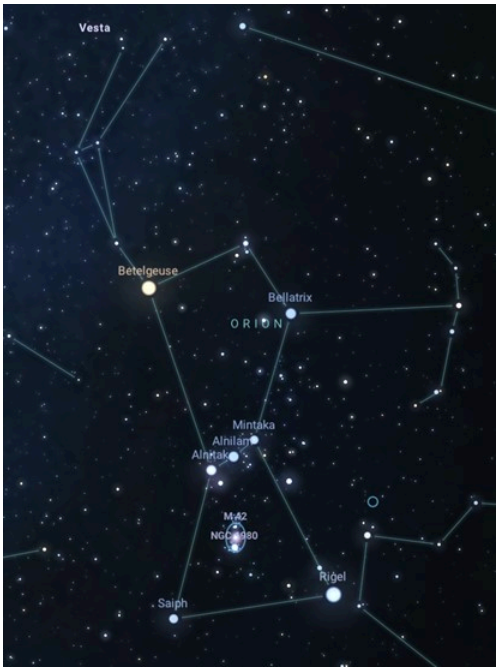
Vatican Observatory Foundation Blog

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

A Flame in the Sky – the Orion Nebula

By Kat Troche

It's that time of year again: winter! Here in the Northern Hemisphere, the cold, crisp sky offers spectacular views of various objects, the most famous of all being Orion the Hunter.

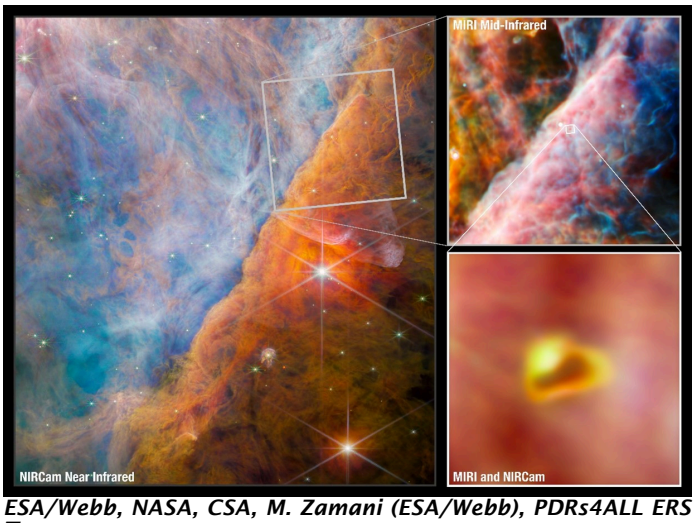


Credit: Stellarium Web

As we've previously mentioned, Orion is a great way to test your sky darkness. With your naked eye, you can easily spot this hourglass-shaped constellation. Known as an epic hunter in Greco-Roman, Orion and all its parts have had many names and meanings across many cultures. In Egyptian mythology, this constellation represented the god *Sah*. The Babylonians referred to it as *The Heavenly Shepard*. In most cultures, it is Orion's Belt that has many stories: *Shen* in Chinese folklore, or *Tayamnicankhu* in Lakota storytelling. But the Maya of Mesoamerica believed that part of Orion contained *The Cosmic Hearth* – the fire of creation.

1,500 light years away from Earth sits the star-forming region and crown jewel of Orion – Messier 42 (M42), the Orion Nebula. Part of the "sword" of Orion, this cloud of dust and gas sits below the first star in Orion's Belt, Alnitak, and can easily be spotted with the naked eye under moderate dark skies. You may also use binoculars or a telescope to resolve even more details, like the Trapezium: four stars in the shape of a baseball diamond. These young stars make up the core of this magnificent object.

Of course, it's not just for looking at! M42 is easily one of the most photographed nebulae around, by astrophotographers here on the ground, large ground-based observatories, and space telescopes alike. It has long been a place of interest for the Hubble, Spitzer, and Chandra X-ray Space Telescopes, with James Webb Space Telescope joining the list in February 2023. Earlier this year, NASA and the European Space Agency released a new photo of the Orion Nebula taken from JWST's NIRCam (Near-Infrared Camera), allowing scientists to image this early star forming region in both short and long wavelengths.



ESA/Webb, NASA, CSA, M. Zamani (ESA/Webb), PDRs4ALL ERS Team

But stars aren't the only items photographed here. In June 2023, JWST's NIRCam and MIRI (mid-infrared instrument) imaged a developing star system with a planetary disk forming around it. That's right – a solar system happening in real time – located within the edges of a section called the Orion Bar. Scientists have named this planet-forming disk **d203-506**, and you can learn more about the chemistry found here. By capturing these objects in multiple wavelengths of light, we now have even greater insight into what other objects may be hiding within these hazy hydrogen regions of our night sky.

In addition to our Dark Sky Wheel, a fun presentation you can share with your astronomy club would be our *Universe Discovery Guide: Orion Nebula, Nursery of Newborn Stars* activity. This will allow you to explain to audiences how infrared astronomy, like JWST, helps to reveal the secrets of nebulae. Or, you can use public projects like the NASA-funded MicroObservatory to capture M42 and other objects.

Learn more about what to spy in the winter sky with our upcoming mid-month article on the Night Sky Network page through NASA's website!