The W.A.S.P.

Volume 56 Issue 1 January 2024

The Warren Astronomical Society Publication

Happy New Year!

Left to Right: Dale Partin (1st VP), Vatshalya Dandibhotla (Publication), Bob Trembley (President), Charles Strackbein (Secretary), Jeff MacLeod (Outreach), and Riyad Matti (2nd VP). Not pictured, Dave Baranski (Treasurer)

From the 2024 WAS Board

The WASP

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

Dale Thieme, Editor

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

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

Membership and Annual Dues

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

Astronomical League (optional) $7.50

Send membership applications and dues to the treasurer:

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

Pay at the meetings

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

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

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

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

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

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

In This Issue

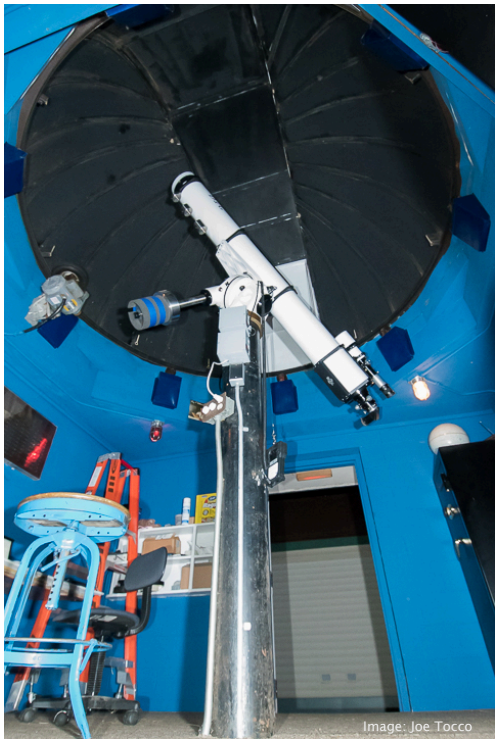
Image: Joe Tocco

Field of View

A LOT has happened in 2023 - I thought I'd do a recap of some astronomy and space events of note, or that I found to be interesting.

OSIRIS-REx Returns

The return of NASA's OSIRIS-REx mission with samples from asteroid Bennu has to top my list of exciting events for 2023; Br. Bob Macke of the Vatican Observatory is on the team analyzing the samples - I asked him recently what the final gram count of samples was. Smiling, he said *"I can't tell you that… and there's a reason for it."* I think it's safe to say that they got a LOT more than they were expecting… "overflowing the container" might be a good way to describe it!

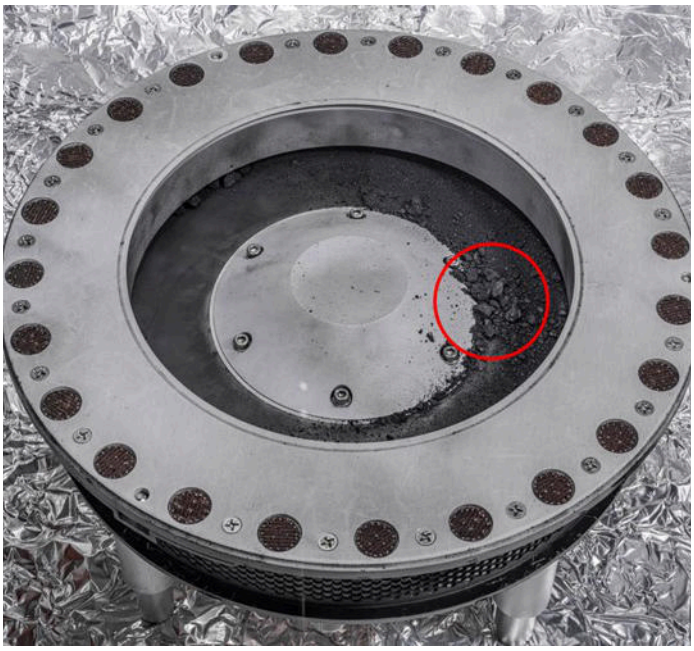

Image: OSIRIS-REx TAGSAM Head with asteroid samples. Credit: NASA/Erika Blumenfeld & Joseph Aebersold

These asteroid samples will be studied for years to come; it would not surprise me if a portion was kept aside for a couple decades with the expectation of the development of new technologies with which to study them - the same as was done with the Apollo 17 lunar samples.

Eclipses

Universe Today says "There are four eclipses in 2023: two solar and two lunar. This is the minimum that can occur in a given year." *That, I didn't know!* Three of these eclipses were not visible from the U.S., and the annular eclipse on Oct. 14th that was visible from Michigan was hidden by

Image: Annular Eclipse. Credit: NASA/JPL-Caltech

clouds; my wife and I streamed the eclipse on my smartphone while we were on the road doing chores.

We did get to hear the cheers of the lucky folks that were able to see the annular eclipse live, and it was good to see how much publicity NASA was giving this event. It's a shame that I have a box full of solar glasses from NASA that went unused… *Whatever shall I do with them?*

JWST

The James Webb Space Telescope continues to be amazing; I see a mention of the JWST in posts every week, and there are several documentaries discussing the JWST entirely or in-part. I see new images from the JWST posted by Heidi Hammel frequently; I've swapped background images on my PC to new JWST images countless times!

The JWST science publications page shows nearly 1100 items, ranging from brown dwarfs to flares from red dwarf stars, to spectra of absolutely everything, to the clouds at the galactic center. And we're only a couple years into the twenty-year (expected) lifespan of this telescope.

Asteroid Dinkinish

The Lucy mission discovered that not only was asteroid Dinkinish a binary object, its companion was itself a contact-binary object! This was an unexpected and marvelous discovery!

Image: Asteroid Dinkinish (left) and satellite Selam (right) ,NASA/ Goddard/SwRI/Johns Hopkins APL

Asteroid Cartaya

I receive bulletins from the IAU's Working Group on Small Bodies Nomenclature - in addition to asteroid observations, these bulletins have a list of newly named asteroids. In the bulletin from Dec. 19th, I noted that Jesuit astronomer Rev. Pedro Pablo Cartaya Gonzalez-Llorente, SJ got an asteroid named after him. I mentioned this to Br. Guy, and he was delighted - he said that if anyone deserved to have an asteroid named after him, it would be Rev. Cartaya.

I wrote a post for the Vatican Observatory about the asteroid; Rev. Cartaya was kind enough to send me a very nice couple of paragraphs to include. One of the things that stands out about Rev. Cartaya is how much public astronomy outreach he has done in the past, and continues to do now - which I thought bared mentioning, as the W.A.S. does a lot of the same!

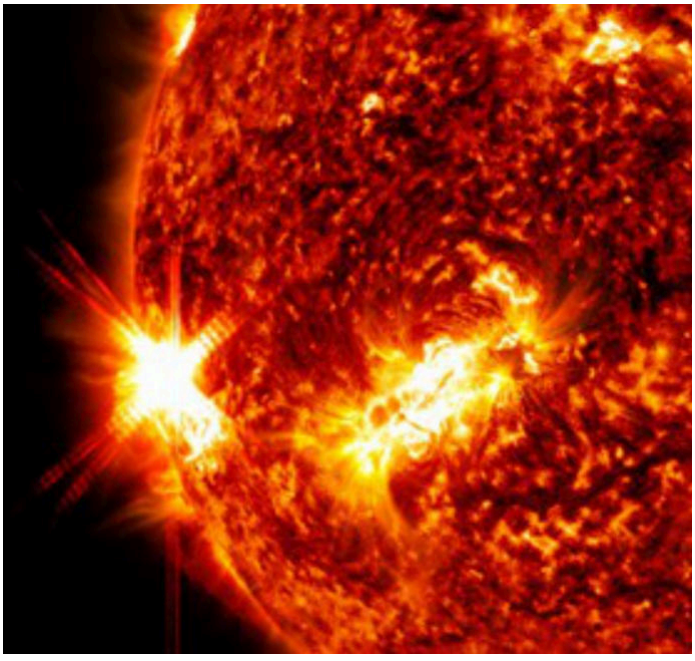

Image: Sun Emits X1.9 Flare on January 9, 2023. Image courtesy of NASA/SDO and the AIA, EVE, and HMI science teams."

Solar Maximum

The Sun has been blowing large flares for *months* now - causing geomagnetic storms and frequent radio blackouts. I saw a post on SpaceWeather.com quoting an Oct. 30th NOAA prediction that "the peak of activity in Solar Cycle 25, also known as a solar maximum, is expected to occur between January and October 2024. This prediction is earlier, stronger, and longer lasting than estimates made in 2019."

Energy from the Sun may well be the driver of many Earth system processes, but it can be *unfriendly* to human technological systems - especially *electrical* systems... like the one I'm using to type these notes. If a Carrington-level event were to occur today, well... let's just say it would be prudent to have the stores of supplies suggested by FEMA.

Solar Gamma Rays

In a paper released this summer, astronomers using the High-Altitude Water Cherenkov Observatory (HAWC) discovered the highest-energy gamma ray ever seen coming from the Sun - an order of magnitude more powerful than had previously been seen! These gamma rays ranged from one to almost ten trillion electron volts. I honestly had not heard about this until I was writing this, but I was so bug-eyed by the news, I had to include it!

Mars Ingenuity Helicopter

There's a helicopter on Mars - have you heard? (I've seen it called a "chopper") It took its first flight on April 19, 2021 (Sol 58) - ascending 3 meters and hovering and landing again. The total flight time was 39.1 seconds, and it was written into the history books as the first powered flight on another planet.

Ingenuity was originally designed to fly up to five times during a 30-sol test period; it took its 69th flight on Dec. 20th (Sol 1007) - traversing 705 meters over 135 seconds. That's some "Montgomery Scott-level" engineering right there!

ISS at 25

It's hard to believe, but the International Space Station celebrated its 25th year in orbit; the station has been visited by 273 people from 21 countries and has conducted more than 3,300 investigations. The International Space Station will continue to operate until 2030 (and maybe beyond). It will be a sad day when the lab is deorbited, but *oh MY* the concepts of the things that will replace it look amazing!

Psyche Mission

NASA has yet another mission on its way to an asteroid; on Oct. 13th the Psyche mission - its target is the metal-rich asteroid named 16 Psyche - which I honestly can't wait to see images of... but I guess I'll have to, as rendezvous with the asteroid won't happen until May 2029.

Year of Asteroids and Outreach

2023 seems to have been the "Year of the Asteroids" - which is fine with me, I find them fascinating! 2023 was also the year the WAS did a lot of outreach - including a return to doing outreach with the Metroparks, and a very successful Astronomy at the Beach event. So *GO US* and thanks everyone! Here's looking forward to a 2024 filled with amazing astronomy events and discoveries!

Bob Trembley,
President

2023 Awards Banquet

Dale Thieme, field reporter

December 11 marked the return to in-person banquets for the Warren Astronomical Society. The last one was in 2019, 2020 was canceled (for in-person, went online), "online" in 2021 and as a special Cranbrook meeting in 2022. Attendance was a big concern but we were encouraged by the 38 that showed up. Looking forward to more in the years to come.

The club remains grateful to the companies and members that contribute to the door prize table: Celestron, Oberwerk, ProtoStar, and members Dale Partin, Gary Ross and Dale Thieme.

Another big thanks goes to the staff of the Ukrainian Cultural Center, providing us with a fine dinner (this reporter found the meatballs to be superb.)

And, I you didn't make the banquet this year, you missed out on a fascinating account of how former WAS president, Jon Blum founded a new astronomy club at the retirement village where he now resides. This makes the second astronomy club he has founded, the other being the one in Hawaii.

Photos by Adrian Bradley

Thank You!

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In this photo, we see Dale Hollenbaugh (center) and his wife, Dale mentioned that this was his first banquet. On his left (to the right in the picture) sits Charles Strackbein, who spent some time talking with this reporter about the current lack of a secretary in the club. He then volunteered for the position, adding to the success of the banquet.

It did not take us long to get down to the very serious business of dining.

As we finished up, Dale Partin took the podium to announce the evening's speaker...

Jon Blum, who used the format he deploys in his monthly talks at the Astronomy Club at Fox Run, an astronomy club he founded, in explaining how that all came to be. He presented "You are Made of Star Stuff" (one of the talks he gave there recently), then a news item and finally an astro photo, elaborating on both. He concluded with his standard practice of a handout to all attendees, this evening being a mint in a starry wrapper, with the tie-in of "these mints are originally made from star stuff."

Group hugs:

Current (2023) WAS Board: Dale Partin, Dale Thieme, Bob Trembley, Mark Kedzior, Adrian Bradley, Kevin McLaughlin, Jeff MacLeod.

Presidents: Jeff MacLeod, Bob Trembley, Ken Bertin, Riyad Matti, Gary Ross, Jon Blum.

Awards

Blaine McCullough Award

A new member (and Publications Director Elect), Vatshalya Dandibhotla volunteered to handle our AV at meetings and took a big burden off the board. For this, she was awarded the Blaine McCullough Award.

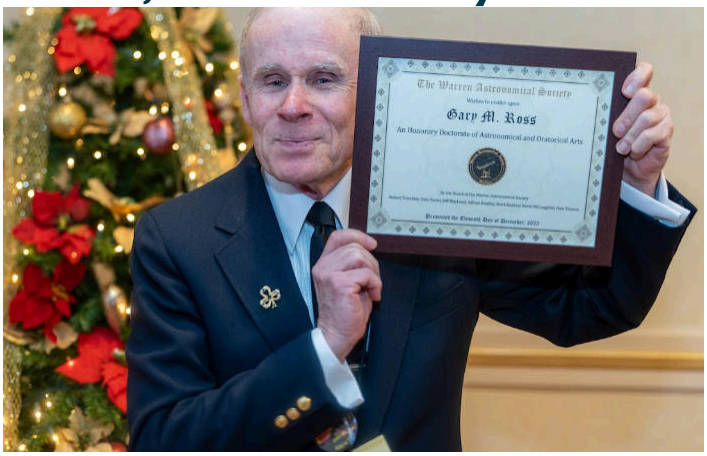
Special Service Award

Continuing with the volunteering theme, Laura Wade and Mike O'Dowd stepped in to handle the snacks at the meetings and received Special Service Awards. Their efforts are most appreciated.

Lifetime Membership Award

A very well deserved award, Lifetime Membership, went to Riyad Matti, whose devotion to the club and the observatory is truly "astronomical". He has spent many years as an active board member and is yet getting ready for another term as observatory chair.

Then, there's Gary.



We finished off the ceremonies with a very special award. Dr. Dale Partin conferred an "Honorary Doctorate of Astronomical and Oratorical Arts" on Gary Ross. Adrian had the presence of mind to call up “Pomp and Circumstance” for the occasion, possible contributing to Dale's inability to hold it together until the end. Great fun.

Observation Reports

7 - 8 December

Ouranus, Jupiter, and TZ Arietis. Disc "pearl" grey, featureless. A moon sited at P.A. 340, intermittent. Now well past opposition, the Giant Planet exhibits very well developed S. Temperate Belt. No analogue in other hemisphere, but ill-defined N. "polar hood" evident. The S.E.B. is more prominent aequatorial belt, at least in width but all so intensity. TZ Ari at (14.6 is well below the mag. published in OBSERVER'S HAND. (2021) 12.35.

Transparency fair, seeing fair.

16-in. f /10 Borr Telescope, Veen Observ. @ 185X, 340X

.....

COMMENTARY. TZ never seen. Conflict of sources, O. H. vs. Ass'n of Var. Star Obs. "e" chart which cites ~ 15. Different sources. Extreme proximity to brighter star, so sky conditions paramount. Class M4, and O.H. lists as 37th closest star: 14.6 l.y.

9 December

The Sun. Four groups over both hemis. Medium sized Waldmeier "C" in N. hemis. Extensive complex in southern hemis. difficult to classify, either "C" or "D".

Transparency fair, seeing fair. Wind & clouds.

Instrumentation as before.

12-13 December

TZ Arietis. Handsome Joe McBride and Observer studied "problem" flare star. Pure happenstance TZ went in to eruption ~ 01.50 U.T. Quick event, ag. estimates differ: his = 15.0, Obs. = 14.4. Distinctly orangish. Invis. at start of observing session.

Transparency fair, then clouds.

16-in. Mighty Borr II, 340X. Veen Observatory.

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COMMENTARY: Definite question about accuracy of "e" chart, Ass'n of Var. Star Obs. (2022). Confusion re how many stars are at precise site of subject star. Spurious magnitude assignment at site of TZ, very unusual unless 2nd object superimposed. Bring to attn. of h.q. at Cambridge. Possible many past observations entered on web-site are error from workers' confusion.

12-13 December (supplemental)

TZ Arietis, previous rept.

Sighting of flare likely in error given light clouds in area.

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COMMENTARY: Handsome Joe McBride attempting to telephone A.V.S.O. h.q. to discuss re difficulty in collating sources. So far unsuccessful.

-GM Ross

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.

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

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

Gold/Blue

Gold-3D

Letter

I belong to this "Instructables" web site. They have lots of cool ideas for do-it-yourself projects over a very wide range of interests,....some are artsy, others food oriented.... but thought this was really a cool project for those who have access to a 3D printer and a Raspberry PI. The image quality of the astro photos is just OK but still it would be a lot of fun to build this. Perhaps if we put the link in the newsletter we might get some members giving it a try. They also have contests for creative projects so I sent info to Jeff MacLeod to consider entering his simulator. There are money prizes for the winners.

Bob Berta

https://www.instructables.com/Pi-lomar-3D-Printed-Working-Miniature-Observatory-/

From the Website:

This is a working miniature observatory. It uses a Raspberry Pi computer for the brains, a Raspberry Pi RP2040 based micro-controller to control the movement, and the Raspberry Pi Hi Quality camera as the telescope. The Raspberry Pi operates in 'headless' mode, so you can operate it remotely from the comfort of your home if you have a home network. You can select targets from a large database and Pilomar will find and track the target if set up correctly. It will then start taking photographs which you can download and 'stack' to create more detailed images.

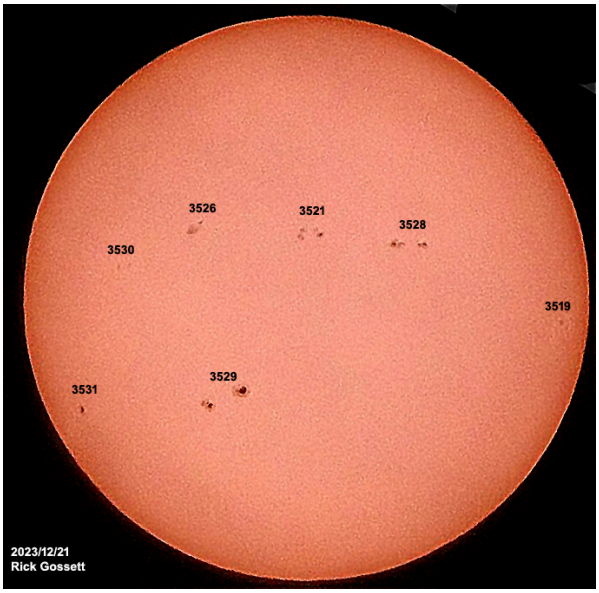
W.A.S.P. Photo and Article Submissions

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.

WAS Astrophotos

I captured the Sun on the winter solstice. There was a momentary break in the clouds. The Sun continues to be active this year.

-Rick Gossett



And from Bob Berta-

Despite the rain and cloudy skies I finally got one semi-clear night (it did cloud up right at the end).

This was taken with my 8" Celestron SCT HD equipped with Hyperstar which converts the scope into a f1.9 very fast telescope and a wider FOV also. This was taken from my backyard in Macomb Twp. in Bortle 6-7 skies.

This was 20 exposures of 120 seconds each through a narrow band LExtreme-2 filter designed for fast optical systems (no good on regular slower scopes). Imaging and stacking all done with the ASI AIR Plus with additional tweaking in Photo Shop and a couple of utilities. This is my first image with this setup although I have a Hyperstar on my larger 11" SCT that I have had for a few years. The advantage of Hyperstar is the much shorter exposure times compared to other slower systems. With our Michigan number of clear nights that is a big advantage ;-)

The image is of Cederblad 214 and NGC 7822. These are very difficult to detect visually... unless you have a 20" or larger scope from very dark skies. They are in the constellation of Cepheus but right on the line between Cepheus and Cassiopeia.

This is a star forming region. It encompasses the emission area of Sharpless 2-171, and the young open cluster Berkeley 59. The complex also includes the hottest stars discovered within 1 kpc of the Sun including an eclipsing binary system of a O5V star with a surface temperature of nearly 45,000 degrees kelvin (our sun is about 5500 degrees Kelvin), and a luminosity 100,000 times of the sun! That star is the prime source of illumination of the nebula. While new stars are being generated, the strong stellar winds and radiation will ultimately erode them away.

M1, the Crab Nebula

By Tab Ahmad

M1, the Crab Nebula, is also known as NGC 1952 and Taurus A. This is a supernova remnant and a Pulsar wind nebula that resides in the constellation Taurus the Bull. It was discovered by English astronomer John Bevis in 1731. M1 corresponds with a rare bright supernova recorded by Chinese astronomers in 1054 as a guest star. The Crab nebula was the first ever astronomical object identified that corresponds with a historically observed supernova explosion.

Its apparent magnitude is 8.4 and it lies roughly 6,500 light years from us (although there is some debate of its distance). The diameter of the object is 11 light years, and it is expanding at a rate of 930 miles per second or 0.5% of the speed of light.

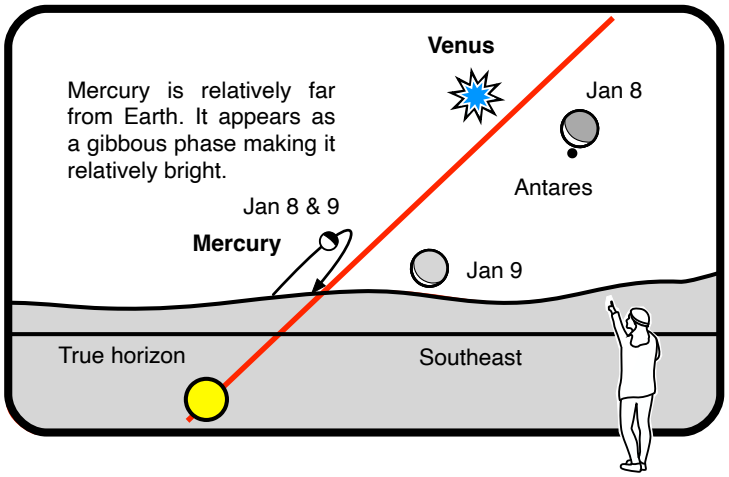
Interestingly, at the center of the Crab nebula lies the Crab Pulsar which is a neutron star approximately 18 miles across. This Pulsar has a spin rate of 30.2 per second. It emits pulses of radiation spanning from gamma rays to radio waves. In general, it is the brightest persistent gamma-ray source in the sky and allows detailed study of celestial bodies that occult it.

The Crab Pulsar and the Vela Pulsar are two of only six known Optical Pulsars. Optical Pulsars are Pulsars that can be detected in the visible spectrum.

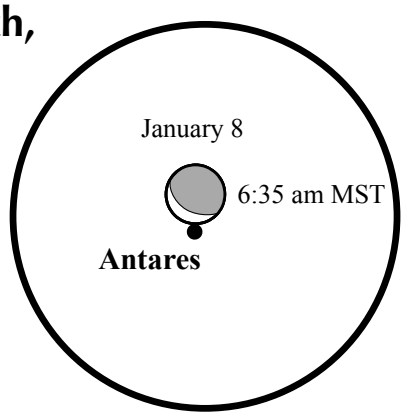
M1 is a popular target for amateur astrophotographers. The nebula's intricate structure and bright colors make it an exciting subject to study. At minimum, a good quality 6"-10" telescope is needed to view M1. In addition, January is the best month to view it if you're in the northern hemisphere.

Figure: M1 the Crab Nebula. Courtesy Wikipedia & JWST

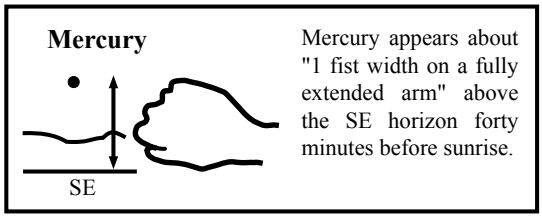
If you can observe only one celestial event this month, see this one:



View through 10x50 binoculars on January 8



January 8 and 9, 2024: Mercury, Venus, and the moon forty minutes before sunrise in the southeast



Mercury appears about "1 fist width on a fully extended arm" above the SE horizon forty minutes before sunrise.

The Scene:

The crescent moon, Antares, Venus, and Mercury in the morning twilight

On January 8, the crescent moon approaches Antares low in the southeast 90 minutes before sunrise.
• The moon occults Antares for viewers living in the southwestern portion of the US. (NM, UT, AZ, and So CA.)
• The event begins at 6:39AM MST, location dependent.
• Use common household binoculars to watch the occultation and begin viewing at 6:35 MST.
* The very bright object to the moon's left is Venus.
• 40 minutes before sunrise, look for Mercury low in the southeast to the far lower left of Venus.

On January 9, an even thinner crescent moon lies right of Mercury and below brilliant Venus.

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)

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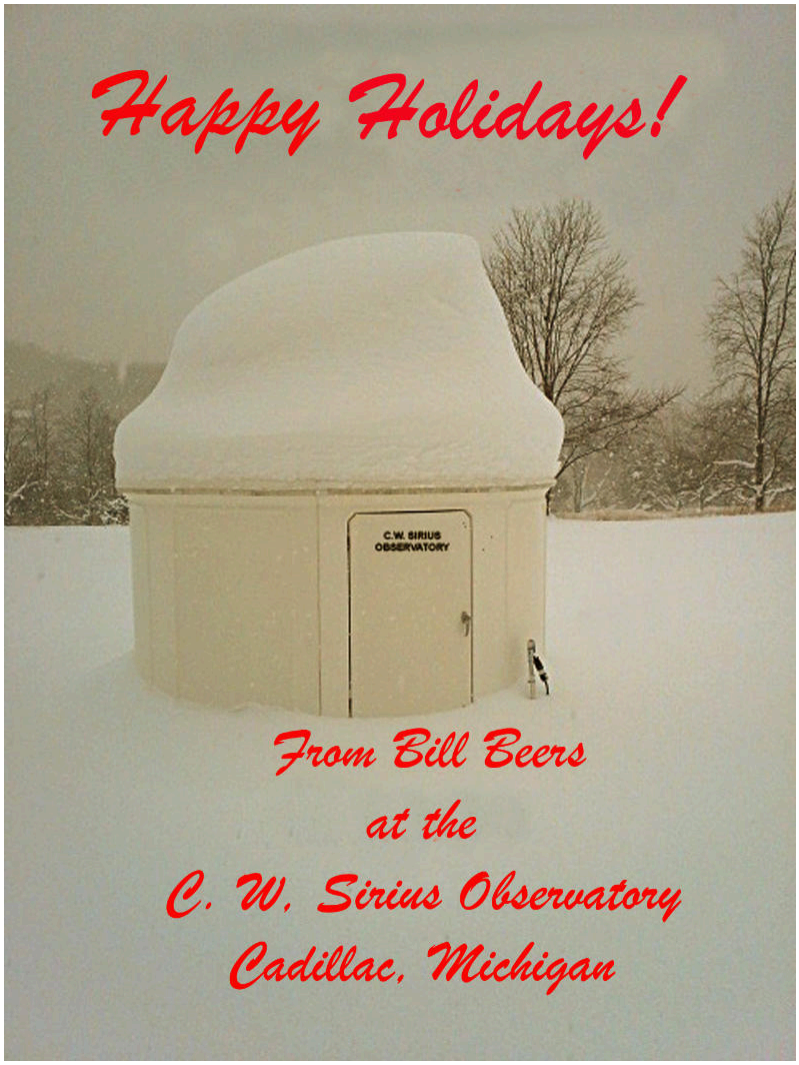
The View From
C.W. Sirius Observatory



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: BEEZOLL@AOL.COM

Presentations

Cranbrook
January 8, 2024

Main Talk

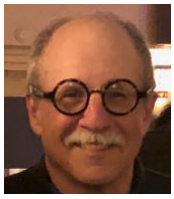
Review of 2023

By By Ken Bertin and Dale Partin

This is a golden age of astronomy, with new instruments, missions, and discoveries. Some of the highlights of 2023 will be discussed in this joint presentation, with topics ranging from discoveries with the new James Webb Space Telescope, exoplanet discoveries, Mars discoveries, eclipses, etc. It's an exciting time to be "wowed" with what's "up".

About the Presenters

Ken Bertin is a hobbyist astronomer for about 70 years, Past President and VEEP of WAS, Searle Award recipient and awarded a Lifetime WAS membership. He has traveled to observe 12 Total Solar Eclipses, 4 Annular eclipses, 6 Transits of Mercury, 2 transits of Venus, and 17 Lunar eclipses. He has written over a hundred presentations presented to the WAS and other astronomy clubs and organizations (such as senior groups, Mensa society, schools at all levels, libraries, and other type clubs), and is currently presenting online.



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.

Short Talk

Cosmic Distance Ladder Using Cepheid Variables

By Angelo DiDonato

Angelo's talk will cover the landmark discovery by astronomer Henrietta Swan Leavitt that transformed Cepheid variables into "standard candles" and how they are used for determining cosmic distances. Included will be pioneering work through the use of Cepheids revealing that our Milky Way galaxy is not unique or alone in the cosmos as well as our location within the galaxy.

About the Speaker

Angelo is a graduate of Wayne State University and a retired Mechanical Engineer from the defense and automotive industries. As a life-long amateur astronomer and ten year member of WAS, his particular interests in Astronomy lie in the origin and evolution of the universe. He also enjoys being a part of our organization's Outreach program.

Macomb
January 18, 2024

Feature

Interstellar Objects I Have Known

By Jonathan Kade

Every current member of the Warren Astronomical Society was born and grew up in a world that had never seen an interstellar object. Now we have seen four: two that humans launched and two that came from other solar systems. In my presentation, we'll talk about these interstellar objects and what we've learned about our solar system and about solar systems in general from studying them.

About the Speaker

Jonathan has served on the W.A.S. board in most years since 2008. As a part-time resident of Black River, Michigan since 1988, he is in love with Michigan's Sunrise Side and its still wonderful skies. He and former W.A.S. President Diane Hall are in the process of starting Dark Skies Alcona, an organization aimed at promoting and protecting the skies of Alcona County and the Sunrise Side in general. He is a devotee of patience, serendipity, and stochastic processes, and as such is well-qualified to talk about these particular objects.

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

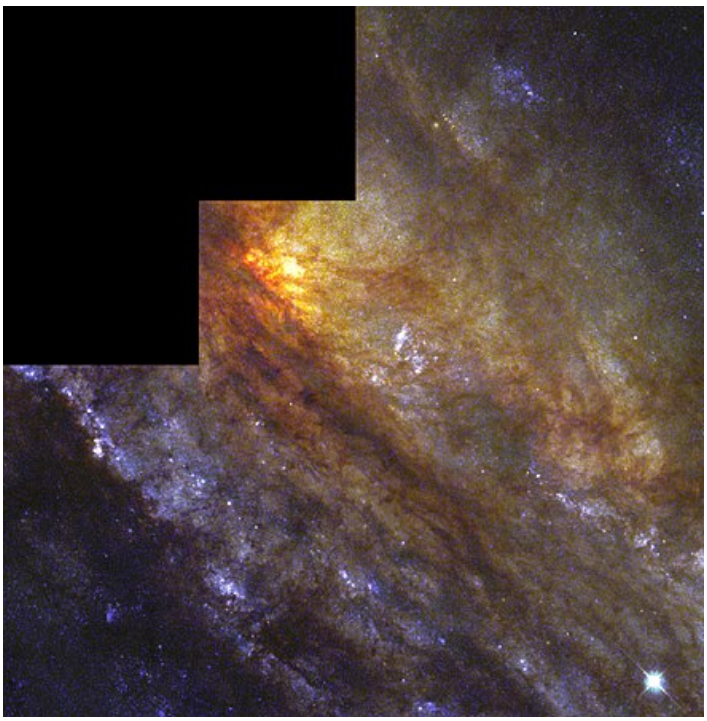
David H. Levy

This month let us explore one of the seminal galaxies in the night sky, NGC 253, Caroline Herschel's galaxy. It shines deep in the southern portion of the sky, south of the bright star Beta Ceti and southeast of the even brighter star Fomalhaut. This is one of my favorite galaxies, largely because of the beautiful story that is associated with its discovery.

This galaxy, which I call Caroline Herschel's Galaxy, is a starburst galaxy. It is so named because it is undergoing a burst of formation of new stars. This process was set off relatively recently, at lest in cosmic timekeeping. About two hundred million years ago, a smaller dwarf galaxy probably collided with this larger one, and it set off this cacophony of new stars being formed. That other galaxy was probably rich in gas, which provided the raw material for the births of the new stars. There is one thing that this galaxy does not share with other starburst galaxies, however; usually these galaxies exhibit frequent exploding stars or supernovae. This one, however, has only one recorded supernova, in 1940.

This galaxy is aligned at almost right angles to our Milky Way. When you look at it, it appears as a thick pencil-like structure.

While searching for comets during the year 1783, Caroline stumbled across this long, slender galaxy hanging above the southern horizon. Duly recorded in her log "the Bills and Rec.ds of my comets," she also began and maintained a list or catalogue of the many objects she and her brother William had discovered, including beautiful drawings of most of them. As a young girl Caroline was close to her father, who brought her outdoors on a cold evening some winter constellations like Orion. It is possible that this was one of the special moments during which she began her love of the night sky.

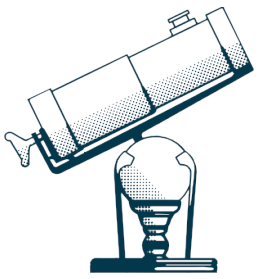


As much as Caroline enjoyed working with her brother William, there were some issues. On one night Caroline fell upon one of the large iron hooks that helped support the telescope on its mount. The accident left a large gash in her thigh. Her brother, not seeing his telescope moving, yelled out "Make haste!" to which Caroline cried out, "I am hooked!" William immediately rushed over to help his sister, and she eventually recovered, with lots of rest and ointment.

When William married Mary Pitt in 1788, there was an obvious increase in tension among the Herschels. She continued working with her brother, although the increased "family dynamics" did cause a problem. William very much wanted his sister to continue helping with his observing, and he was successful in arranging a royal stipend for her.

In 1802 the Royal Society published the catalogue that Caroline had kept over many years. However, the publication in *Philosophical Transactions of the Royal Society* was credited to William, even though it was her catalogue. Over a long period of time, thanks to the work of later astronomers like John Louis Emil Dreyer, almost 8000 objects now comprise the New General Catalogue.

The woman who discovered the wonderful galaxy in Sculptor certainly enjoyed a remarkable life and career, living until she was almost 98 years old. In the 1980s Caroline's eight comet discoveries were surpassed by Carolyn Shoemaker, in what was seen at the time as the highlight of Carolyn's career. However exciting that achievement might have been, it was completely eclipsed by her discovery of Comet Shoemaker-Levy 9 in March of 1993. That comet gave humanity its first lesson in what happens when a comet strikes a planet, and by inference, how comet collisions can lead to the origin of life on a world. As I gaze upon Caroline Herschel's galaxy on these winter nights, I imagine life forms there looking back, trying as we do, to share our cosmic heritage.



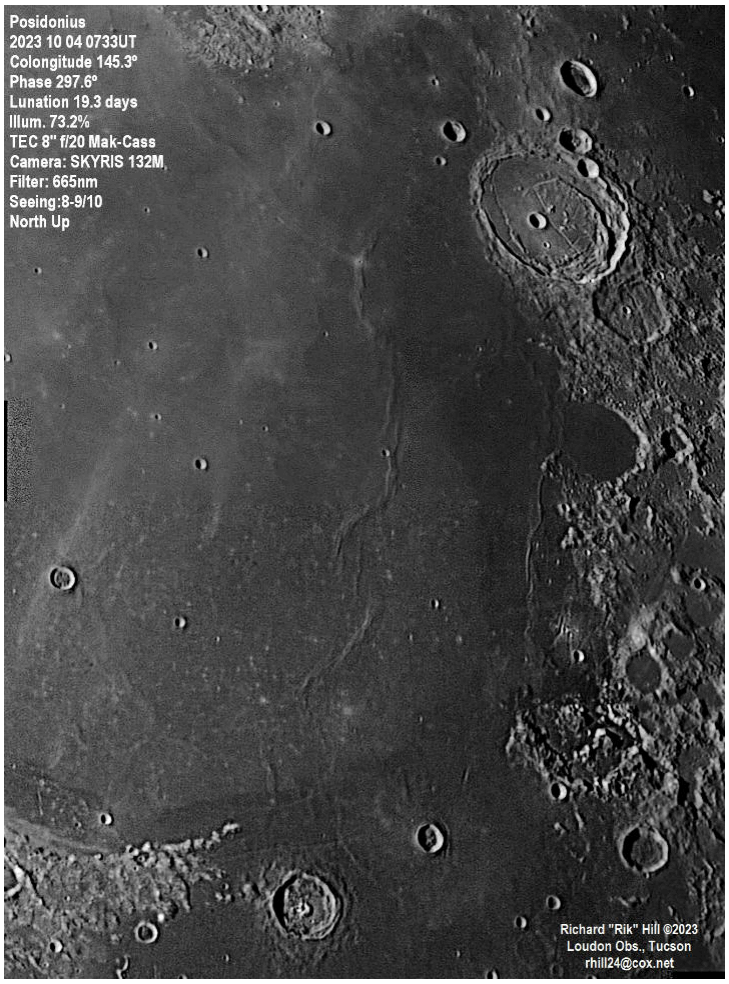
Over the Moon

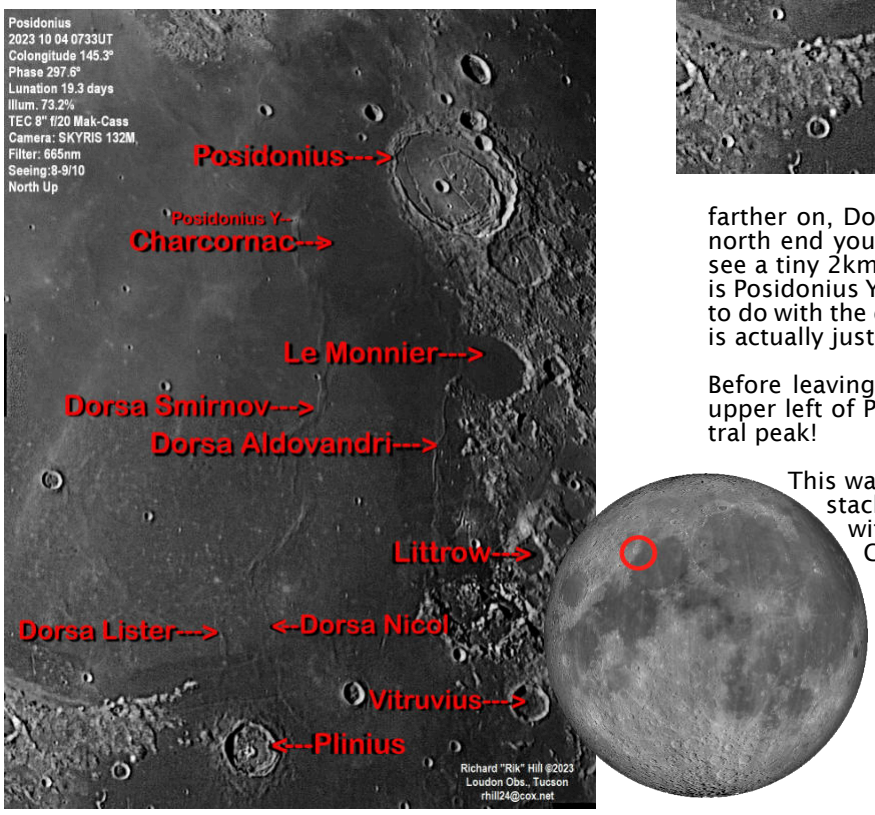
With Rik Hill

Wrinkles

At my age one usually does not invite conversation about wrinkles. But, no matter, I will plunge into the topic! Here we see sunset on the great crater Posidonius (99km dia.) in the upper right of this image with the wonderfully fractured floor. Below this crater is another much older crater, Charcornac (53km). You can guess at its relative age just by the ruin of its walls and the many rimae that cross its floor. Moving further south we come to the fascinating embayment opening on Mare Serenitatis, Le Monnier (63km) also very old, possibly going back to just after the formation of the Moon itself. Then at the bottom of this right edge is another embayment with a crater above and below filled with rough peaks. The crater below is Vitruvius (31km) and above is none other than Littrow (32km) with the rough peaks being near the Taurus-Littrow landing site of Apollo 17.

Between Littrow and Le Monnier is what we used to call "wrinkle ridges". The two here form a fairly straight line named Dorsa Aldovandri. Then further out in the mare and parallel to this coastline is another larger wrinkle ridge Dorsa Smirnov, not having anything to do with a beverage but named for 20th century Soviet naturalist. In my early days of lunar observing, early 1960s, this was called the "Serpentine Ridge" and it took a little work before I clearly saw it in my little 2.4" refractor. In a larger telescope it can be quite impressive. The uppermost end of the main dorsum is split into a "Y" and the bottom end terminates just north of the crater Plinius (44km) seen at the bottom edge of this image where Smirnov splits off into Dorsa Lister and





farther on, Dorsum Nicol. Where the dorsum splits on the north end you will see a white spot at that point. You can see a tiny 2km crater in the middle of that white spot. This is Posidonius Y. The crater and it's white ejecta has nothing to do with the dorsum, just a coincidental juxtaposition and is actually just a couple kilometers south of the split.

Before leaving, notice the large 50km ghost crater to the upper left of Plinius in Serenitatis. It even has a ghost central peak!

This was made from portions of 3, 1800 frame AVIs stacked with AVIStack2 (IDL) and put together with MS ICE software then finished off with GIMP and IrfanView.

Location Maps by Ralph DeCew

History S.I.G.

By Dale Thieme

January 1996

The first article in this issue, “A Tale of Two Comets” is a compilation of several articles about comet Hale-Bopp gathered by Douglas E. Goudie. In the article, “From The President” John Herrgott muses, among other things, about building a portable telescope in addition to our Stargate one (this would eventually be the 22"?.)

“Computer Chatter” by Larry F. Kalinowski and an announcement of an “Essay Contest” also appear in this issue (reading through the description, the contest seems more like a presentation contest.) "LOUIE THE LIBRARIAN'S BOOK OF THE MONTH" review by Louis Namee covers *New Horizons in Astronomy* by Grant Fjermedal. "Masterpieces Messier Missed" by Jeff Bondono completes the issue and covers NGC 1502 at 04h08m +62 20'

January 2006

At 5 pages, this issue is slim pickings. “Astro Chatter” by Larry Kalinowski dominates the issue (thinking he singlehandedly kept the WASP alive through some lean times content-wise - Ed.) Larry continues to run “The Swapshop” and NASA's “Space Place: A New View of the Andromeda Galaxy” by Dr. Tony Phillips and Patrick L. Barry rounds out the issue.

From the Scanning Room

December 2023 marked the end of my position as Publications Director. This tallies up to a board career of two years as Secretary, two years as treasurer, four years as publications director (and six years as editor.) It's been a busy 10 years for me and a pleasure to serve the club in those capacities.

But, I'm not quite ready to retire, I will continue on as editor of the WASP. I am looking forward to working with the new Publications Director, Vatshalya Dandibhotla. She is bringing a much needed computer skill-set to the position.

At the banquet, Mark Kedzior and me, one last duty as officers. Photo Adrian Bradley

WASP

Warren Astronomical Society Paper

Volume 28, Number 1 — $1.00 for non-members — Jan., 1996

A TALE OF TWO COMETS

By various authors (identified where known)
Edited for the WASP from electronic media
by Douglas E. Goudie

Finding Comet Hale-Bopp
By Kevin Gill

Where is it Going?

FROM THE PRESIDENT

COMPUTER CHATTER
by Larry F. Kalinowski

ESSAY CONTEST

W.A.S.P. ASTRONOMY ESSAY CONTEST

The W.A.S.P. newsletter

January 2006

The Warren Astronomical Society Paper

P.O. Box 1505
Warren, Michigan 48090-1505
www.warrenastronomicalsociety.org

Volume 38, Number 1 — January 2006

2006 WAS OFFICERS

Astro Chatter
by Larry Kalinowski

Another year, another banquet and another great time was had by all. It was another full house at DeCarlo's in Warren. Our guest speaker, Robert Naeye, from Sky and Telescope magazine, covered the subject of exsoplanets so completely that I felt I now knew all there was about planets around other stars.

The prize table for the raffle was the best so far. There must have been, at least, forty different prizes for distribution like books, three eyepieces, gift certificates, an equatorial mount, a green laser, star wheels and planetarium programs. Everyone received free handouts about The Chandra space probe which included a wall chart and a CD about its expectations and accomplishments, thanks to Pete Rynshovin and NASA. Many thanks go out to those individuals and dealers that contributed to the event.

The following people were given certificates for lecturing during the year; Rothenberg, Berta, Partin, Bailey, D'Onofrio, Workun, Schmalzel, Maxim, Shedlowski, Kalinowski, (for his great Bob Newheart telephone skit about a stargazer that lost the star named after him) Kunz, Forester, Narlock, Odowd, Dillard, Martin, Szumanski, Matti, Uitti and Bertin. Distinguished service awards went to: Phipps and Klaus. The amateur astronomers of the year were: Robacker and Crysler. The E. John Searles award went to Richard Lipke for his generous contributions to our club.

On the night of November 7, 2005, an event occurred on the Moon that every amateur observing it, with a telescope, could have seen. It was a Taurid meteor that struck the surface with an impact of about 70 Kg of TNT, hitting the ground with a speed of about 27km per second. The event was recorded with a video camera by Rob Suggs and Wes Swift, of the

CRANBROOK INSTITUTE OF SCIENCE

Michigan's Museum of Natural History

JANUARY 2024

Notable Sky Happenings

Jan. 1 - 7

Earth is closest to the Sun on the 2nd The Quadrantid Meteor Shower peaks on the night of the 3rd-4th. Bright star below and to the left the Moon on the 4th is Spica (S predawn).

Jan. 8 - 14

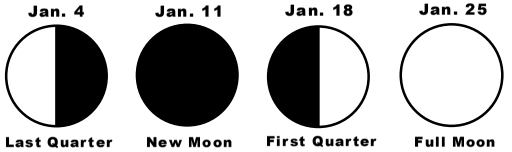
The Moon is above and to the right of Antares, Venus is to the left and Mercury is at the lower left (SE predawn on the 8th). Moon is below Saturn on the 13th and upper left on the 14th (SW evening).

Jan. 15 - 21

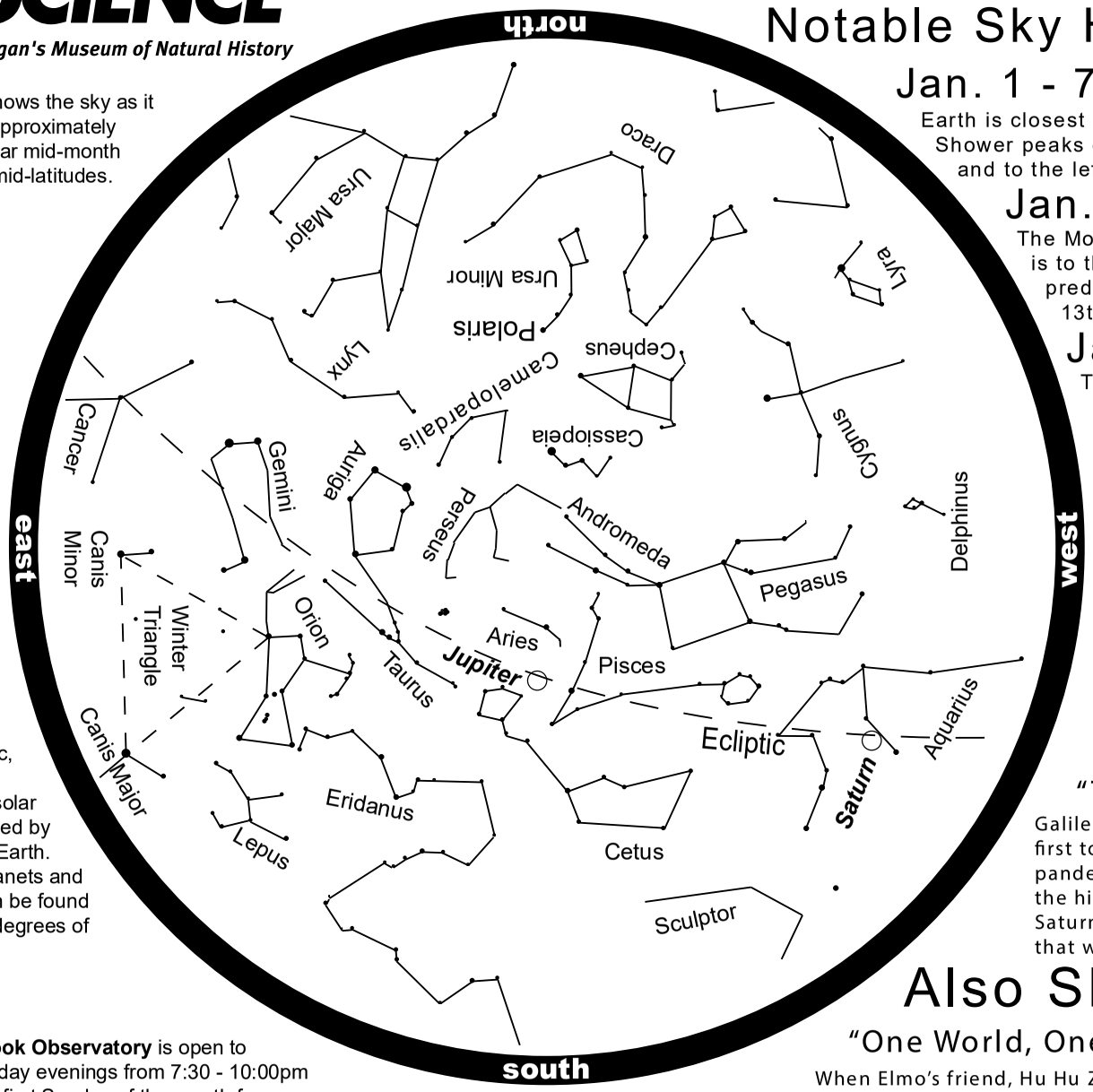
The bright "star" to the lower right of the Moon on the 18th is Jupiter (S evening).

Jan. 22 - 31

The bright star above the Moon on the 24th is Pollux in Gemini; the "twin" star, Castor, is above (ENE evening). The Moon is to the right of Regulus on the 27th (W predawn).



This chart shows the sky as it appears at approximately 7pm 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

"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.

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

Heart Nebula - Bob Berta

January 2024

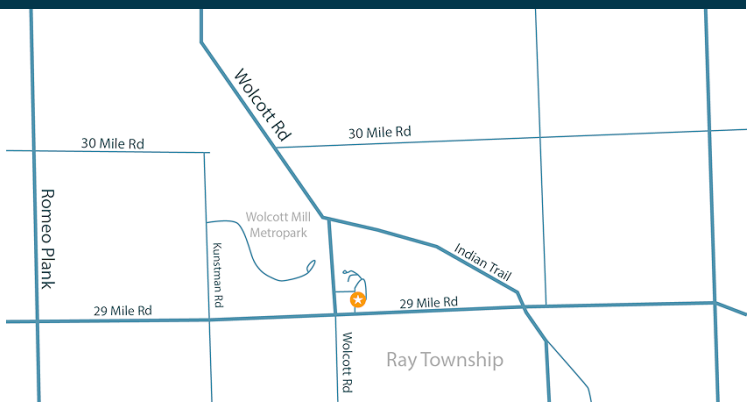
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 New Year's Day Moon at Apogee: 404911 k	2 Earth at Perihelion: 0.98330 AU	3	4 Quadrantid Meteor Shower	5	6
7	8 Cranbrook	9	10	11 NEW MOON	12	13 Moon at Perigee: 362264 km
14	15 Martin Luther King Jr. Day	16	17	18 Macomb	19	20
21	22	23	24	25 FULL MOON	26	27 Stargate
28	29 Moon at Apogee: 405781 km	30	31			

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.

Meeting Minutes

WARREN ASTRONOMICAL SOCIETY

DECEMBER BOARD MEETING (VIRTUAL)

NOVEMBER 27, 2023 7:00PM

Meeting called to order at 7:00 PM. Officers present: President Bob Trembley, 1st VP Dale Partin, Secretary Mark Kedzior, Treasurer Adrian Bradley, Publications Chair Dale Thieme (quorum present). In attendance – incoming 2024 2nd VP Riyad Matti.

OFFICER REPORTS:

President Bob Trembley discussed need for finding a secretary to volunteer/appoint to 2024 Board. 1st VP Dale Partin discussed presentation schedule and need for short presentations in 2024. Secretary Mark Kedzior reported on door prizes for awards banquet. Treasurer Adrian Bradley gave WAS treasury report. Publications Chair Dale Thieme reported the December WASP is available online. No 2nd VP or Outreach reports.

OLD BUSINESS:

WAS Awards Banquet review -$50 tip each to bartender and server. Discussion on audio-visual system requirements for banquet – club will use own projector at event. Adrian will assist in setting up extra sound for presentation. Discussion on Stargate exterior - ramps and rocks situation.

NEW BUSINESS:

Dale Partin reports that Macomb Room E208 is booked through May 2024. July 8th Cranbrook meeting will have Michigan Mineralogical Society presenting. Discussion on wearing body microphone for presentations. Discussions on finances of the WAS (income and expenditures). Next WAS Board meeting will be held on Tuesday, January 2, 2024, with new incoming board assuming offices.

Motion to adjourn by Adrian Bradley – second by Dale Thieme. Meeting ended at 8:04 PM.

Respectfully submitted,

Mark Kedzior,
Secretary

WARREN ASTRONOMICAL SOCIETY

CRANBROOK (Hybrid) MEETING

DECEMBER 4, 2023 7:00PM

Meeting called to order for Cranbrook hybrid meeting at 7:00PM by President Bob Trembley. Persons in attendance: 28 - Zoom - 22 & YouTube – 3 @ 8:00PM).

The meeting began with introduction of persons in attendance - Final Banquet report and ticket sales announced for December 11th. Officers in attendance gave their reports. Outreach request for Detroit Public Library regarding solar eclipse presentations. Discussion on solar eclipse viewing safety – Metro Detroit area will experience 99% of sun's surface eclipsed by moon – still must use proper eye protection even at this percentage of eclipse occurring and must be stressed.

SHORT PRESENTATION:

Dale Partin gave a presentation on "Martian Dust and Solar Cells". He explained the issue of dust on solar panels on Mars especially during dust storms. He presented numerous scenarios on the costs and use of various power sources to be used on scientific equipment currently on Mars and future missions' equipment and their power needs. Questions and discussion followed his very informative presentation.

MAIN PRESENTATION:

Matthew Lallo, Mission Systems Scientist, Telescope Branch at the Space Telescope Science Institute in Baltimore, MD, presented his first-hand account in "Wavefront Sensing and Control for the James Webb Space Telescope". "He discussed years of planning, testing and team rehearsals that enabled the James Webb Space Telescope to be delivered one day ahead of schedule, and whose optical performance exceeded both requirements and expectations" of this marvelous telescope. "He continues to lead a team of astronomers and variety of engineers and scientists responsible for pointing and imaging performance of both the Hubble and James Webb Space Telescopes."

Questions and discussion followed his captivating presentation.

Meeting ended at 9:25PM.

Mark Kedzior,
Secretary

WARREN ASTRONOMICAL SOCIETY

2023 ANNUAL AWARDS BANQUET

DECEMBER 11, 2021 @ 7:00PM

The Annual Awards Banquet of the Warren Astronomical Society, being held at the Ukrainian Cultural Center in Warren, began at 7 PM with a welcome from WAS President Bob Trembley. Attendees (37 in total) began the evening enjoying the fabulous menu that the Ukrainian Cultural Center prepared. After dining was completed, Bob Trembley began the 2023 Year in Review, highlighting club accomplishments, the election of the 2024 WAS Board officers, and noting the passing of former WAS members.

MAIN PRESENTATION:

Dale Partin introduced former WAS President Jon Blum with his presentation, "You're Made of Star Stuff".

AWARDS PRESENTATIONS:

The following members received the following awards:

Blaine McCullough Award – Vatshalya Dandibhotla

WAS Special Service Award – Laura Wade and Mike O'Dowd

WAS Lifetime Membership Award – Riyad Matti

WAS Honorary Doctorate of Astronomical and Oratorical Arts – Gary M. Ross

Following awards presentations, traditional photos of outgoing and incoming board taken, along with past and current WAS Presidents in attendance.

Drawing of donated door prizes from Celestron, Oberwerk, Protostar, Dale Partin, Dale Thieme and Gary M. Ross, won by members and guests in attendance who purchased the winning tickets. The banquet ended at 9:30PM.

Mark Kedzior
Secretary, WAS

Stargate Report

December Open House

Riyad reports:

The observatory was opened at 5:27 pm. The sky was cloudy and raining. All equipment and both buildings are in good condition.

We had one visitor and one member attending. I introduced the WAS and observatory to the visitor who may be interested in joining the society. I answered questions about astronomy and observing.

I delivered 2 volumes of the Night Sky Observer's Guides from the collection of the late Lee Hartwell as a donation to the observatory. I removed the H-alpha solar telescope for winter storage and will return in March.

The observatory was closed at 8:16 pm.

January Open House

The Observatory will open at 6:30 pm Saturday, January 27, 2024.

Treasury Report

Treasurer's Report for December 31, 2023

BOA account:

Balance:.....$24,242.01

Received:.....526.50

Expense 1469.93

(Banquet, Paul Strong Scholarship)

PayPal Account:

Balance:.....$991.95

Received:.....421.91

Paid 16.10

(Postage)

Membership

Total Paid Memberships 114

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."

Astronomical Events For January 2024

Add one hour for Daylight Saving Time

Source:

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

Date	Time (h:m)	Event
1	10:28	Moon at Apogee: 404911 km
2	20:00	Earth at Perihelion: 0.98330 AU
3	22:30	LAST QUARTER MOON
4	4:00	Quadrantid Meteor Shower
4	13:52	Moon at Descending Node
4	18:06	Spica 2.0°S of Moon
8	9:24	Antares 0.8°S of Moon
10	3:31	Mars 4.2°N of Moon
11	6:57	NEW MOON
12	9:00	Mercury at Greatest Elong: 23.5°W
13	5:35	Moon at Perigee: 362264 km
14	4:31	Saturn 2.1°N of Moon
17	9:05	Moon at Ascending Node
17	22:53	FIRST QUARTER MOON
18	15:40	Jupiter 2.8°S of Moon
20	8:25	Pleiades 0.9°N of Moon
24	14:00	Pollux 1.7°N of Moon
25	12:54	FULL MOON
27	11:00	Mercury 0.2°N of Mars
27	11:18	Regulus 3.6°S of Moon
29	3:14	Moon at Apogee: 405781 km
31	15:17	Moon at Descending Node

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,
2023 Treasurer

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!

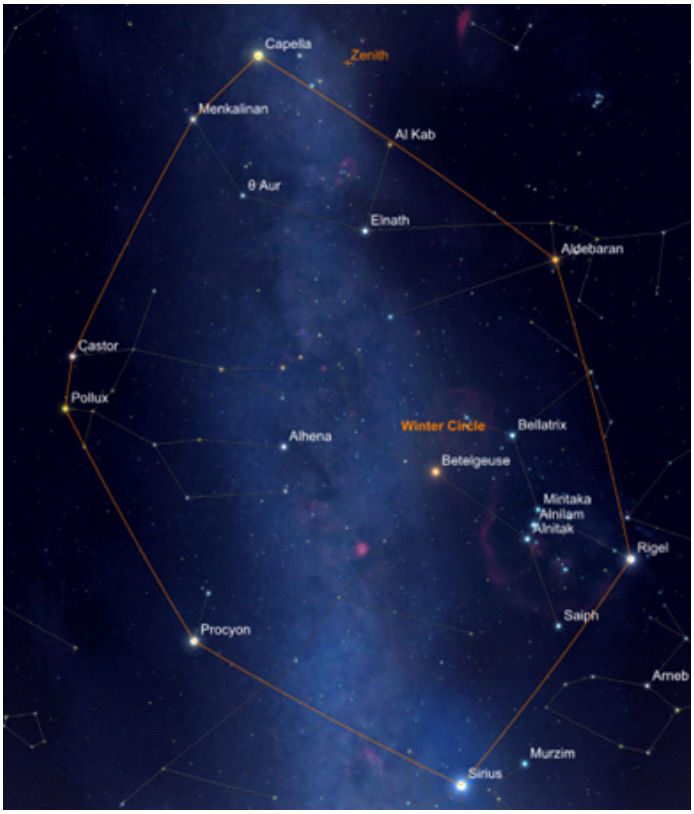
Connecting the 'Dots' with Asterisms

By Kat Troche

In our December Night Sky Notes, we mentioned that the Orion constellation has a distinct hourglass shape that makes it easy to spot in the night sky. But what if we told you that this is not the complete constellation, but rather, an asterism?

An asterism is a pattern of stars in the night sky, forming shapes that make picking out constellations easy. Cultures throughout history have created these patterns as part of storytelling, honoring ancestors, and timekeeping. Orion's hourglass is just one of many examples of this, but did you know Orion's brightest knee is part of another asterism that spans six constellations, weaving together the Winter night sky? Many asterisms feature bright stars that are easily visible to the naked eye. Identify these key stars, and then connect the dots to reveal the shape.

Asterisms Through the Seasons



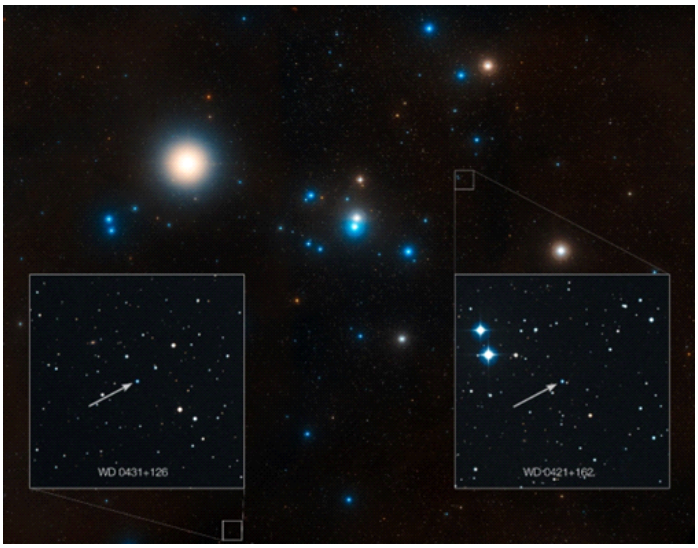
Stars that make up the Winter Circle, as seen on January 1, 2024 Sky Safari.

Try looking for these asterisms this season and beyond:

- Winter Circle – this asterism, also known as the Winter Hexagon, makes up a large portion of the Winter sky using stars Rigel, Aldebaran, Capella, Pollux, Procyon, and Sirius as its points. Similarly, the Winter Triangle can be found using Procyon, Sirius, and Betelgeuse as points. Orion's Belt is also considered an asterism.
- Diamond of Virgo – this springtime asterism consists of the following stars: Arcturus, in the constellation Boötes; Cor Caroli, in Canes Venatici; Denebola in Leo, and Spica in Virgo. Sparkling at the center of this diamond is the bright cluster Coma Berenices, or Bernice's Hair – an ancient asterism turned constellation!
- Summer Triangle – as the nights warm up, the Summer Triangle dominates the heavens. Comprising the bright stars Vega in Lyra, Deneb in Cygnus, and Altair in Aquila, this prominent asterism is the inspiration behind the cultural festival Tanabata. Also found is Cygnus the Swan, which makes up the Northern Cross asterism.
- Great Square of Pegasus – by Autumn, the Great Square of Pegasus can be seen. This square-shaped asterism takes up a large portion of the sky, and consists of the stars: Scheat, Alpheratz, Markab and Algenib.

Tracing these outlines can guide you to objects like galaxies and star clusters. The Hyades, for example, is an open star cluster in the Taurus constellation with evidence of rocky planetary debris. In 2013, Hubble Space Telescope's Cosmic Origins Spectrograph was responsible for breaking down light into individual components. This observation detected low levels of carbon and silicon – a major chemical for planetary bodies. The Hyades can be found just outside the Winter Circle and is a favorite of both amateur and professional astronomers alike.

How to Spot Asterisms



This image shows the region around the Hyades star cluster, the nearest open cluster to us. The Hyades cluster is very well-studied due to its location, but previous searches for planets have produced only one. A new study led by Jay Farihi of the University of Cambridge, UK, has now found the atmospheres of two burnt-out stars in this cluster — known as white dwarfs — to be "polluted" by rocky debris circling the star. Inset, the locations of these white dwarf stars are indicated — stars known as WD 0421+162, and WD 0431+126.

NASA, ESA, STScI, and Z. Levay (STScI)

- Use Star Maps and Star Apps – Using star maps or stargazing apps can help familiarize yourself with the constellations and asterisms of the night sky.
- Get Familiar with Constellations – Learning the major constellations and their broader shapes visible each season will make spotting asterisms easier.
- Use Celestial Landmarks – Orient yourself by using bright stars, or recognizable constellations. This will help you navigate the night sky and pinpoint specific asterisms. Vega in the Lyra constellation is a great example of this.

Learn more about how to stay warm while observing this Winter with our upcoming mid-month article on the Night Sky Network page through NASA's website!