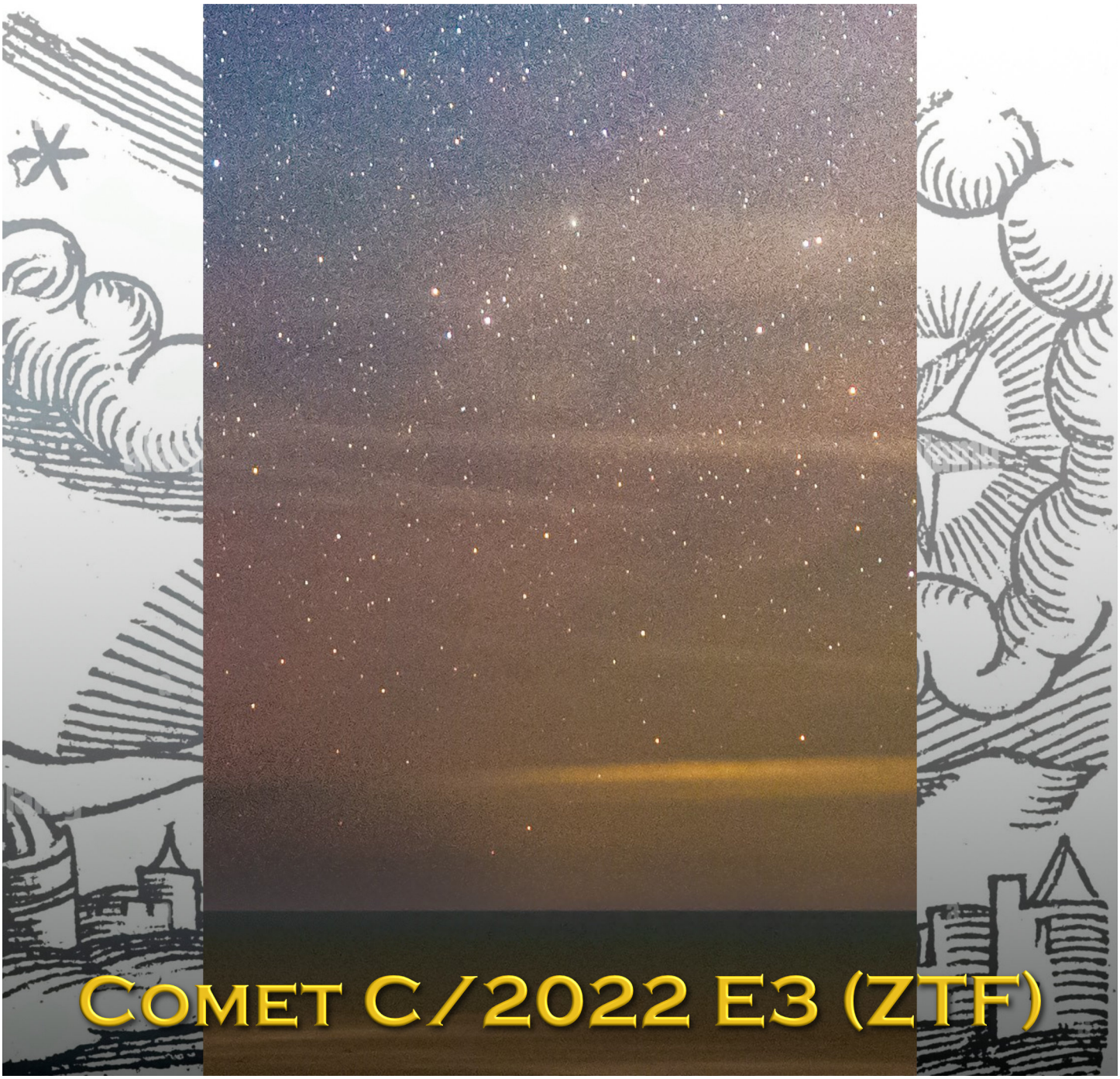
The W.A.S.P.

Volume 55 Issue 2 February 2023

The Warren Astronomical Society Publication



Undaunted by the “Michigan Nebula”, Adrian Bradley set out to capture an image of the comet from a reasonably dark site and wound up with an image that had barely a hint of the comet. The comet appears upper middle of this image as a bright fuzzy spot. Photo taken January 15, 2023

The WASP

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

Dale Thieme, Editor

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

Field of View 3
Letters 4
From the Field 7
Observation Reports 8
WAS Astrophotos 9
C.W. Sirius Observatory 10
Presentations 12
Skyward 13
Book Review 14
[Your Name Here]-1 15
Over the Moon 20
History S.I.G. 21
Texas Star Party 2023 22
Sky Chart 23
Calendar 24
Stargate Observatory 25
Treasury Report 26
Stargate Report 26
Astronomical Events 26
Meeting Minutes 27
GLAAC 29
NASA Night Sky Notes 30

Discussion Group Meeting

Come o… …tronomy, space news, and what-not!

Field of View

I first became aware of the concept of "Big Data" when I attended a Solar System Ambassador teleconference in 2013 with a mission specialist from the Lunar Reconnaissance Orbiter (LRO) mission. The LRO is a spacecraft in a polar orbit of the Moon, and it has mapped the Moon's surface in such high detail that the tracks from the Apollo rovers are visible!

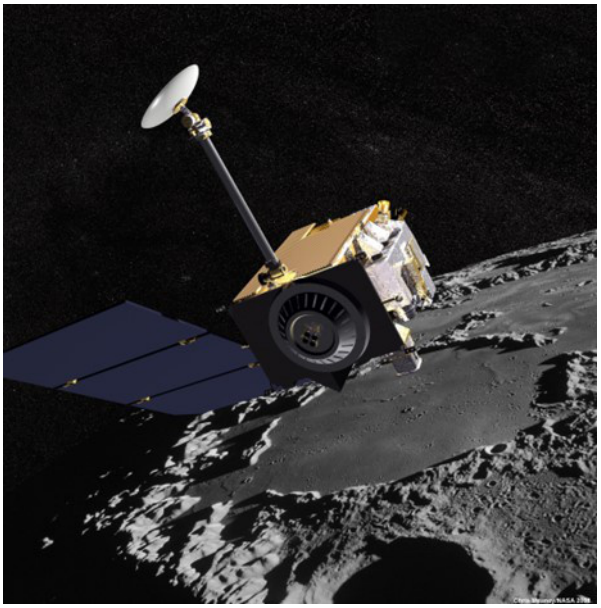


Image: NASA's Lunar Reconnaissance Orbiter. Credit: NASA/JPL-Caltech

"The LRO is great because it's returning lots of data! The problem is that it's returning lots and LOTS of data!" The LRO transmits 461GB of data per day, every day, and it has been doing so for years!

The LRO has returned so much data, that two citizen science projects were spawned to allow the public to help classify thousands of small segments of the Moon's surface.

LRO has observed temperature variations on the Moon, and its data has been used to create a detailed topography map of the Moon. Because the LRO is continuously mapping the Moon's surface, it has spotted multiple *new* impact craters and even a new double-impact crater!

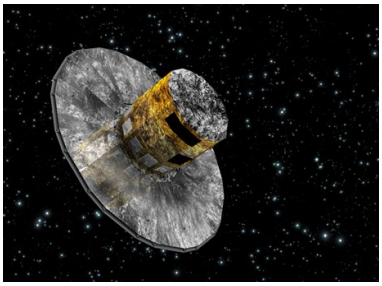


Image: ESA's GAIA spacecraft. Credit: ESA

The ESA's Gaia mission seeks to create a three-dimensional map of our Galaxy - the GAIA Early third Data Release (EDR3) contains detailed information on more than 1.8 billion sources; the spacecraft transmits 40 Gigabytes of information per day, or 73 Terabytes over the nominal life of the mission.

The black hole at the center of M87 was imaged by the Event Horizon Telescope - approximately 5.5 petabytes of data were gathered during the April 2018 observations. Future campaigns are expected to record up to 15 PB per year. Dr. Heino Falcke told Br. Guy and I during a podcast that there was so much data that physical hard drives had to be physically shipped from the observatory to the processing center - the data speed of the internet was woefully inadequate for the task.

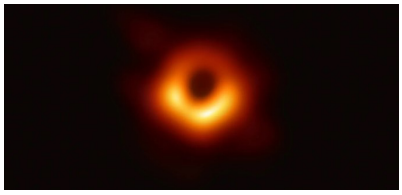


Image: ESA's GAIA spacecraft. Credit: ESA

The Square Kilometre Array is an international radio telescope project being built in Australia and South Africa. It's estimated that the SKA could generate an exabyte of raw data each day - using data compression techniques, this could be condensed down to a mere 10 petabytes.

These are just a few examples of the numerous recent astronomical surveys and experiments that are generating massive amounts of data. With advances in technology and new and larger surveys and experiments coming online all the time, the trend of bigger and bigger data will only continue.

Image: Artist's impression of the future SKA-Mid dishes (left) and the existing precursor MeerKAT telescope dishes in South Africa. Credit: SKAO

What's a researcher to DO with all that data?

Every other year, the Vatican Observatory hosts a month-long summer school in Rome, Italy, The VOSS gives young scientists from around the world an opportunity to learn from the world's leading experts in astronomy - many alumni have gone on to lead in many areas of astronomical research. This year's VOSS theme is: "Learning the Universe: Data Science Tools for Astronomical Surveys." Essentially, how to deal with "Big Data."

The instructors for the 2023 VOSS are experts in numerical and statistical analysis, data mining, simulation, AI and machine learning. These are the kinds of tools and techniques used by modern astrophysicists on their massive data sets. I told Br. Guy I want to be a "fly on the wall" during these summer school sessions!

We've come a long way from the days of calculating orbits using paper and pencil. I'm pretty sure that when my granddaughter is an adult, our "Big Data" of today will be laughably small by comparison.

Bob Trembley,
President

Letters

Letter to award winning W.A.S.P.

"'Way out west" here, Savant **Adrian** is "Mister Thumb". His photo-essay in the January number on night sky darkness (or lack) shows how expanded his brief has become. I sincerely wish an astro-mate no longer with us, **John F. Szymanski** could read it. "Big Jack" was a real horse-back student of sky observing quality, hardly a scientist but more nature poet. Of course there is little poetry in extraneous light verily "polluting" the majesty of the heavens.

Adrian's study of the sky at Lake Hudson is a little painful. My late neighbour **James Matthew Marron** played a small role in that site's dark sky designation, even though Jim was no expert in atmospheric physics -- or even observational astronomy. He simply considered a night sky as a cultural feature worth defending. At the time I had doubts about the efficacy of the project, but know when to keep quiet with a man trying to do the right thing.

There is a sad foot-note to Adrian's reports/presentations from the field. On a very early morning in mid-May, 1998, I was on the Michigan-Indiana border. The observing mission was a fiasco, so disappointment encouraged further dreariness: There were no more dark skies in southern Michigan, except the "Thumb". Occasionally I have run this hypothesis by others, with complete agreement. But Adrian bears bad news with his light-house picture from eastern Michigan's "well at the world's end". Even there . . .. Bad Axe? Bay City? *Port Huron/Sarnia*?

One might consider going down the drain to become a cosmologist. At least the hours are a lot less onerous.

G. M. Ross, the Kenneth Clark of the Warren Society.

G. M. Ross forwarded this gem from the vaults

He prefaced it with these comments:

There is an interesting picture/simulation of M-42 lashed up at end of 2009 by the famous Mark John Christensen -- who in the '70's was a hanger-on in the Society. A "shape of thing to come treatment.

He used improper nomenclature: 42 Orionis.

From: Mark Christensen

To: Larry Kalinowski; G. M. Ross; Gerry Persha; Jim McBride; Raymond A. Rea

Date: Wednesday, December 02, 2009 19:51

Subject: M42 with and without a supernova

Last Friday, despite the moon and some high drifting cloud, I was able to take a picture of M42 with the 12 inch. Polar alignment (despite the use of the Kemko polar scope) was not ideal and I think I can improve my focusing of this beast a bit.

So the picture has four things going against it. But I am still happy, esp. since we also saw a double transit of Jupiter that night.

Two versions: One as it is today (average stack of nine 2-min exposures) and another a projected picture of the nebula and environs in 10,000 years when *42 Orion* blows up.

I was trying to get the central region along with the middle brightness parts. Experimenting with layers in Paint Shop Pro.

Mark

M42-now

M42-imagined with supernova

Not inspired by Adrian's photo-essay, but . . .

JOHN F. SZYMANSKI was usually a joy and constantly an inspiration to hang about with. I met him at the Detroit Astronomical Society in 1966.

"Big Jack" was an observer of natural phenomena. He was on-off a dedicated astro-photographer at his family's cottage -- and eventually observatory -- in Oscoda County. One of his (perverse) specialties was night sky-glow!

Around the turn of this century the vile mercury vapour lights, which commenced to bother astronomers in the 'sixties, started to give 'way to sodium or some hybrid of luminaire. Jack said the night sky looked "burning", and as one went farther from a metropolitan area, the city "burned".

THE SKY IS NOT BURNING

Far, far out the sky is not burning.
The rise and the set,
Whence the heavens are turning,
Is unchallenged by fire.

A conflagration,
A conurbation.
Domicile of mankind
Beyond what could be
A century's grasp to see.

The airliner turns,
So a galaxy swirls
As the sky burns
By instrumentality
No one could foresee.

-- G.M.R. (2000)

Book *Un*reviews

Boldly Go by William Shatner

Polar Express by Felicity Aston

Two books I have NOT reviewed. Both are not astronomers. BUT you should read them. Both are fascinating and I am recommending them.

Boldly Go with a subhead "Reflections On a Life of Awe and Wonder." All of you, all of the amateur astronomers can absorb and adhere (like sponges) to his life, awe and wonder. "Where matter in the universe came from, where it's going, why it's expanding... I know very little, but I know just enough about the universe to be in its thrall, in awe of its mystery."

That's the golden nugget of his life and his readers, too. His feelings are infectious. I have loved science and astronomy since I was 10. I never missed Star Trek. This 235-page book illuminated a nice trip to space and thus dissected into his brain and his heart. "... a great number of scientists, service people, astronauts, and doctors went into those fields because they were inspired by what they saw on *Star Trek*."

Before he was launching Blue Origin's spaceflight, he wrote: "The majesty, the wonder, the mystery." Like a kid in the candy store. You should like him. Because he is a real human being, not a character in a series or movies. And he likes dogs and horses!

Polar Express with a subhead "An All-Women's Expedition to the North Pole." The author is a British citizen, a polar explorer and research scientist. She wrote about her and her companions with their personal recollections of the freezing cold Arctic. This book is full of lavish color photographs and revelations of this author's vast imagination. This journal identified her work in climate change, measuring the ozone layer. The expedition, she assumed, will be the last exploring trip because the ocean is winning. The Arctic frozen ground was filled by cracks and fissures during the ice breaking.

The Arctic and Siberia (I reviewed another book, also) measured the same processes in exoplanets. Personal, hand-to-hand, research scientists– it's another alternative to robotic spacecraft.

This book within its compact 245-page, wrote of her teamwork "sharing laughter and tears throughout the adventure." Her awe and wonder, and tributes to a scientific, logical brain... and her deep affection heart, too.

-Ed Bas

Fwd: Stargazing in N. Michigan...

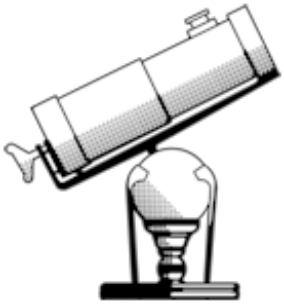
1) I have never "star-gazed" with no intention of starting. Sounds frivolous.

2) From a past life I am reasonably familiar with the geography, and sorry to say not impressed, through no fault of the founders. As a "dark sky" facility the only advantages are, a) on a big lake promontory, b) observatory. Of the Douglas Lake-Pellston area, I have been saddened by sky degradation over the past 40+ years. But there was a night in '08 after passage of a cold front . . ..

-GM Ross

-------- Original Message --------
Subject: Stargazing in N. Michigan...
Date: 2023-01-23 09:51
From: John Levings
To: G.M Ross, Esq.

https://www.mlive.com/news/2023/01/northern-michigan-dark-sky-park-to-host-free-summer-astronomy-programs.html



Telescope Support Systems

FAAC Astronomy Conference & Swap Meet

Saturday, April1, 2023 9:00 am - 3:00 pm

General Astronomy

9:30 am: **Imaging A Rocket Launch** - John McGill
10:45 am: **3D Printing for Astronomy** - Liam Finn
12 N **Astronomy for Everyone** - Don Klaser
1:30 pm: **Interstellar Comets & Asteroids** - Jonathan Kade

Technical Talks

9:30 am: **Starlink Internet +** - Jeff Thrush
10:45 am: **James Webb Telescope** - Tim Campbell
12 N: **My Obervatory** - Sean Pickard
1:30 pm: **Jantar Mantar** - Jim Frisbie

Planetarium Shows

10:00am, 11:30am & 1:00pm FAAC Members

Swap Meet

All Day…Earn Cash by Selling Those Items Sitting Around Collecting Dust!
Telescopes, Eyepieces, Cameras, Binoculars, Mounts, Software, Books, and Accessories, etc.

Admission: $5.00 (children 15 and younger – Free / must be accompanied by an adult)

Sales Table: $15 in advance, or $20 at the door as available, (one admission ticket included).

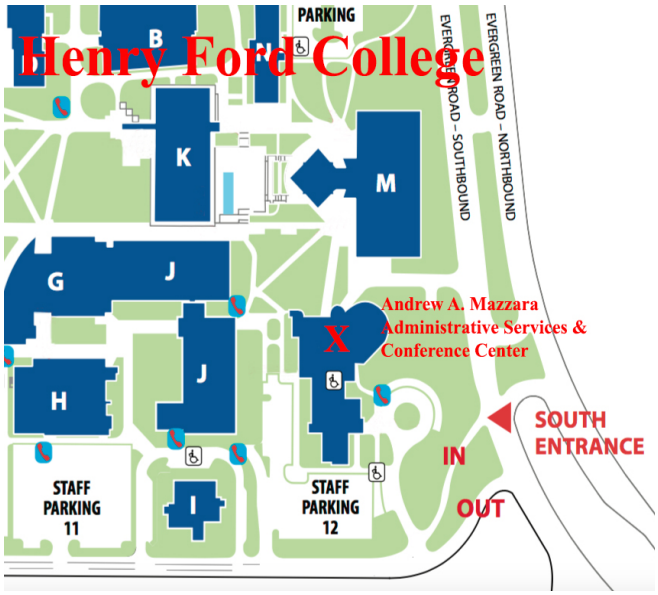
Advanced Table Registration ends Mar 15, 2023

Doors Open: 8:00am for setup.

Make Checks Payable: to **FAAC** for advance table registration**.**

Send payment to: Ford Amateur Astronomy Club, P.O. Box 7527, Dearborn, MI 48121-7527

Location: Henry Ford College, 5101 Evergreen Rd, Dearborn, MI 48128 (Andrew A. Mazzara Admin. & Conference Center… See **X** on map, Staff Parking Lots 11 & 12 will be open)



For More Information: Contact Jim via email: w8tu@comcast.net or call (734) 751-6280

From the Field

Fwd: Hello from Gilbert AZ

In from **Beverly A. Niedelson**, of Grand Rapids, once *buena amiga* of Bruce P. Sidell, in his day the most vigourous galaxy observer in the tri-state and Ontario. (The William B. Beers of visual observing.) Because of Dr Sidell, "BAN" has developed a fond, and sad, eye for astronomica.

GM Ross

-------- Original Message --------
Subject: Hello from Gilbert AZ
Date: 2023-01-20 23:15
From: Beverly Niedelson
To: GM Ross
I mean Akron.

Visiting my cousin, a transplant from Chicago. ... She took me to this nature preserve and I came upon this little bitty observatory. They even have star parties and visitor nights like the GRAAA.

Observation Reports

4 January

The Sun. Perihelion day. Obs'd setting through long horizontal break in day-long clouds, altitude above geometrical horizon unknown. Approx. 6 hrs. past perihelion. Solar Declination @ -22 deg. 40'. On 21 December 14 d. earlier, when Sun crossed R.A. 18 h. he was Dec. -23 deg. 26'.

Transparency poor (clouds.)

Naked eye.

COMMENTARY: Solar calculator by N.O.A.A. was employed. Forward from Handsome Joe McBride. In 55K yrs. perihelion will take place in July.

4 January (supplemental)

The Sun. "The limiting values are 32' 36" and 31' 32", the former being attained at the beginning of January and the latter at the beginning of July". Size of disc, perihelic vs. aphelic part of Earth's orbit. (LAROUSSE ENCY. [1958]).

9 January

The Sun. 6 groups total arrayed all across disc, 4 in S. hemisphere, and 2 of those at central disc extensive with many spots. One spot E. of central meridian huge, containing several umbrae.

Transparency poor from cirro-stratus.

6-cm. refractor, Mylar aperture filter.

.....

COMMENTARY: "[A]ctivity has risen dramatically, and we are on our way to the Maximum of Cycle 25. Predictions that the new cycle would be smaller than Cycle 24 are likely to be wrong". No Maunder nor Dalton Minimum this cycle nor the next. (K. Tapping, OBS. HAND. [2023], p. 185)

14 January

The Sun. Very active with five groups well distributed, three S. and two N.

On central meridian (S.) is a modest primate spot with three umbrae in penumbra. Same hemis. @ E. limb stands a large primate with (likely) 3 umbrae. Near E. limb (N.), very extensive group of small members in two components.

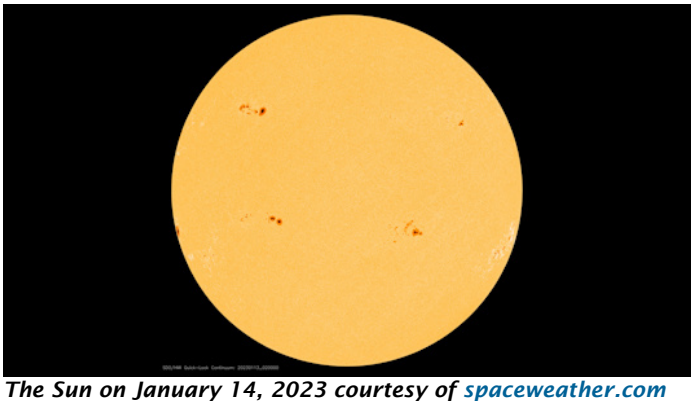
Transparency excellent, seeing good.

5-cm. refractor @ 60X, Mylar aperture filter.

.....

COMMENTARY Tapping's analysis in current OBSERVER'S HANDBOOK seems prescient.

Activity Cycle 25 is well under-way.



The Sun on January 14, 2023 courtesy of spaceweather.com

30-31 January

The Moon. Waxing gibbous, approx. on meridian @ 01.00 U.T. Observer judged at max. possible N. Declination, but no: farthest north to be on the 2nd,

+27 deg. 25 arc-min.

Transparency poor from alto-stratus.

Naked eye obs'n.

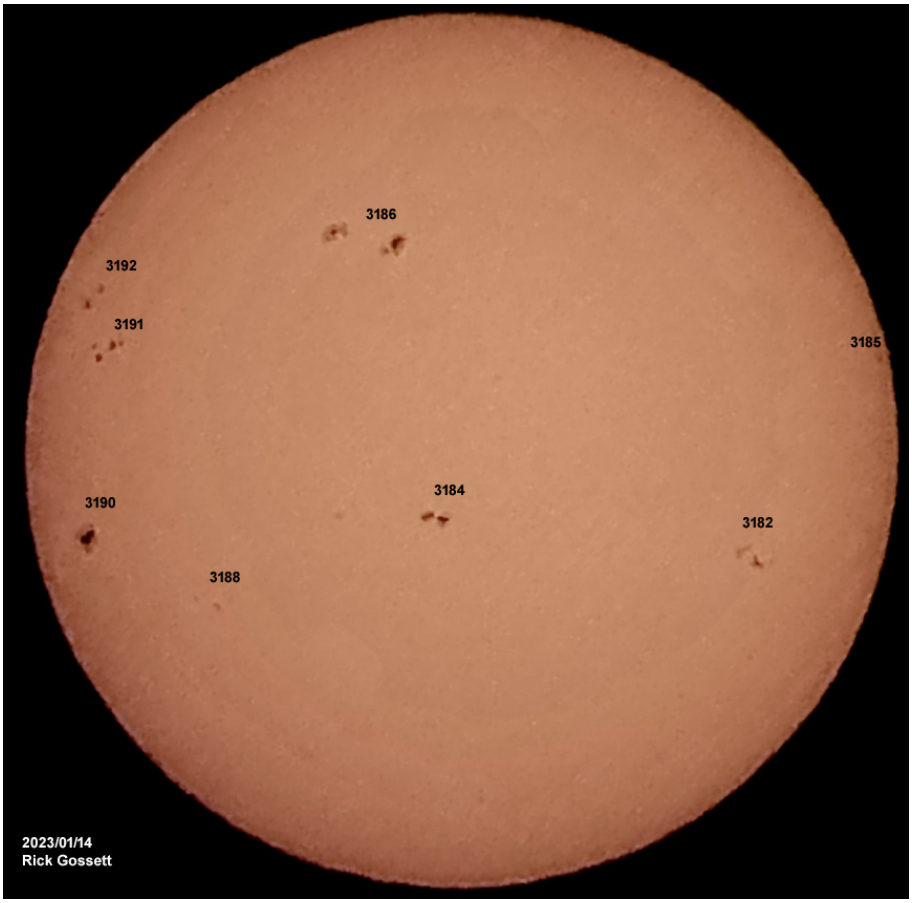
.....

COMMENTARY: Per the *OBS. HAND*. (2023) she will be at very farthest north in Oct. and (once) Nov. @ 28 deg. 20'. Calculated with circular slide rule.

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.

WAS Astrophotos



Rick Gossett says of this image:

"On 01/13, Solar activity knocked out radio transmissions at the South Pole. The sky finally cleared on the 14th, and I captured an image in white light. I cannot remember the last time that I saw the Sun as active as it is today.

The image was captured with an 80 mm f5 refractor, and a Thousand Oaks filter. I used a phone with an Orion phone adapter."

The View From
C.W. Sirius Observatory

Messier 100 and Friends

Image: Bill Beers

As galaxy season is soon approaching, wishful thinking, I wanted to display a very beautiful face-on galaxy. This is Messier 100 (also known as NGC 4321). It is a grand design intermediate spiral galaxy located in the constellation Coma Berenices. It is one of the brightest and largest galaxies in the Virgo Cluster and is approximately 55 million light-years from our Milky Way galaxy. With a diameter of 107,000 light years, it is about 60% as large. M100 was discovered by Pierre Méchain in 1781 and 29 days later seen again and entered by Charles Messier in his catalog "of nebulae and star clusters". It was one of the first spiral galaxies to be discovered. After the discovery of M100 by Méchain, Charles Messier made observations of the galaxy depicting it as a nebula without a star. He pointed out that it was difficult to recognize the nebula because of its faintness.

Messier 100 is considered a “starburst galaxy” with the strongest star formation activity concentrated in its center, within a ring – actually two tightly wound spiral arms attached to a small nuclear bar of radius where star formation has been taking place for at least 500 million years in separate bursts.

I included an annotated image of the M100 galaxy field. Many additional galaxies can be seen in the same field of view. This is an example of how the Coma Berenices / Virgo constellation is filled with galaxies, which can be easily viewed during spring and early summer. Messier 100 is one of the prettiest galaxies to image. It can easily be seen using an 8” telescope. But a larger scope in darker skies will reveal more detail, as well as being able to spot some of

M100's "friends". I took this image last summer using an 11"SCT telescope and a ZWO 071 camera. It is 6 ½ hours of total exposure time. So, as spring approaches, I know it's only February, and we finally get some clear skies here in Michigan, I highly recommend you scan through the Virgo cluster of galaxies with your telescope. And start with Messier 100 and his friends.

Image: Bill Beers

About CW Sirius Observatory

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

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

Presentations

Cranbrook
February 6, 2023

Main Talk

Of Comets, Love, and Poetry

Dr. David Levy

David's presentation is about the magic of comets. He will be briefly discussing some of the great comets, particularly the Great Comet of 1965, but the bulk of it will be personal; how he began his search in 1965, some disappointments along the way, his first comet discovery in 1984, and his co-discovery of Comet Shoemaker-Levy 9 nine years later with Gene and Carolyn Shoemaker. He will also consider his most important discovery of all. While observing a Lyrid meteor shower in April 1978, he imagined how so many English writers put pen to paper and wrote about the beauty and passion of the night sky.

About the Speaker

David H Levy is arguably one of the most enthusiastic and famous amateur astronomers of our time. Although he has never taken a class in astronomy, he has written over three dozen books, has written for three astronomy magazines and has appeared on television programs featured on the Discovery and the Science Channels. Among David's accomplishments are 23 comet discoveries, the most famous being Shoemaker-Levy 9 that collided with Jupiter in 1994, a few hundred shared asteroid discoveries, an Emmy for the documentary Three Minutes to Impact, five honorary doctorates in Science and a PhD from the Hebrew University of Jerusalem (2010) which combines astronomy and English Literature. Currently, he is the editor of the web magazine Sky's Up!, has a monthly column, Skyward, in our local Vail Voice paper. David continues to hunt for comets and asteroids, and lectures worldwide.

Short Talk

A Novel Approach to Echo Mapping of Supermassive Black Holes

Jacob Callebs

Active Galactic Nuclei are some of the most luminous objects in the universe, and are powered by the in-fall of matter onto a super-massive black hole at their centers. The energy emitted from gas close to the black hole can have a big impact on the galaxy in which it resides. Understanding how this process works is therefore important. However, the angular size on the sky of the region around the supermassive black hole is far too small to directly image (except for a couple of exceptionally rare cases). In this project we will use a novel approach to a technique called echo mapping in order to better understand the geometry and distribution of gas surrounding super-massive black holes. This project will make use of data from NASA telescopes, and so is directly related to NASA strategic priorities.

About the Speaker

Jacob Callebs is a third year undergraduate student at Wayne State University. He is majoring in physics and intends to pursue a doctorate in Astrophysics. In preparation for that he is currently doing under-graduate research on active galactic nuclei. He also enjoys sharing his passion for the cosmos with others by being a show host at the WSU Planetarium. As president of the WSU Chapter of the Society of Physics Students, he has been able to build up that organization, help others with their academics, and create a sense of community on campus. He is excited to have this opportunity to share his research with the Warren Astronomical Society.

Macomb (virtual)
February 16, 2023

Feature Presentation

The Fermi Paradox: Where are they?

By Jon Blum

This is a video of a presentation that Jon made for an astronomy club that he runs at Fox Run, the active senior community where he lives. He will discuss a simplified version of possible answers to the Drake equation (how many intelligent civilizations live in the Milky Way), the Fermi Paradox (why haven't we heard from them), and what would qualify as evidence that aliens have visited the Earth. Note that this presentation was intended for an audience that does not have any background in astronomy, so it is not as technical as many other WAS presentations.

About the Speaker

Jon Blum became interested in astronomy 21 years ago when he retired from his dermatology profession and received a telescope as a gift from his children. He joined the WAS and the Ford club, and other astronomy clubs, to learn about astronomy, and has enjoyed the many friendships he has made here. He is a past vice president and past president of the WAS. His concerns about Covid have prevented him from attending our meetings in person over the past three years.

David H. Levy

Back to the Moon

I shouldn't have been surprised by the complete success of the Artemis mission last fall. NASA's A team of engineers really know what they are doing. The mission was fun to watch, particularly the brilliant light when the main engines lit up, and it provided some hope that we may actually return to the Moon, someday soon.

But somehow, it isn't the same. Something is missing.

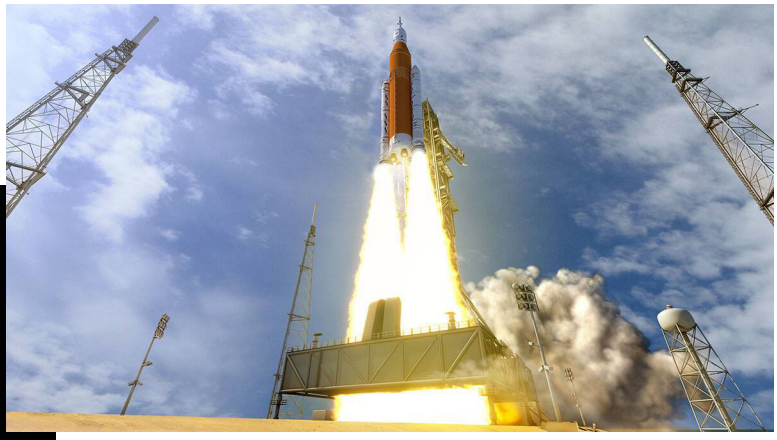
For those of us who were alive and young in 1961, do you remember President Kennedy's poignant speech to Congress on May 25, 1961, when he asked the nation to commit itself to landing a person on the Moon? Only three days after my 13th birthday, this was a call I heard distinctly. I did miss the fact that this was the second of three speeches. The first call was during his inaugural address: "Let both sides seek to invoke the wonders of science, instead of its terrors. Together let us explore the stars…" And at Rice University he gave his third: "We choose to go to the Moon."

On August 25 of the summer of 1960, I observed a 99.2% partial eclipse of the Moon in which the shadow of the Earth covered almost all of the Moon. I remember, a few years later, setting up my first telescope, Echo, across the street to time the Moon passing in front of star, and explaining to a priest who was passing by, that what I was doing might actually assist the Moon mission planning. Or not.

I have already written about where I was on July 20, 1969, during that emotional moonwalk. I listened attentively as the astronauts on Apollo 13 somehow managed to return safely home after the near-disaster of Apollo 13. And I watched the interminable countdown hold when, on December 6, 1972, the countdown was stopped just thirty seconds before launch. About two hours later the lunch was completely successful, and the program's only geologist, Jack Schmidt, conducted a field excursion 240,000 miles from Earth, in the Taurus-Littrow valley of the Moon's southern highlands. Í was enormously pleased and proud of Jack," recalled his teacher Gene Shoemaker, "but I was also wistful. There but for a failed adrenal gland, went I." Because of Addison's disease, Shoemaker never made it to the Moon, at least not in life. After he died in 1997, some of his ashes landed on the Moon aboard Lunar Prospector.

In the 1960s, I used the Apollo project to intensify my own passion for observing the Moon through telescopes and binoculars. In 1961, Kennedy set the goal. Eight years later, humans walked the lunar surface in one of the high points of human civilization. That passion I carry to this day. I still enjoy watching the Moon, looking at its well-known craters and mountain ranges. The Moon is not just a thing in the sky. It is a place. Twelve people have walked across its surface, and with luck, more people will someday stroll across its surface.

I will never walk on the Moon. But through my telescope, I shall continue to view the Moon from southern Arizona. And when my eye touches the eyepiece of my telescope, I will be as close to the Moon as I ever hope to get.



launch of Artemis 1 in December 2022.
Photo: NASA

liftoff of Apollo 17 from the Moon in December 1972.
Photo: NASA

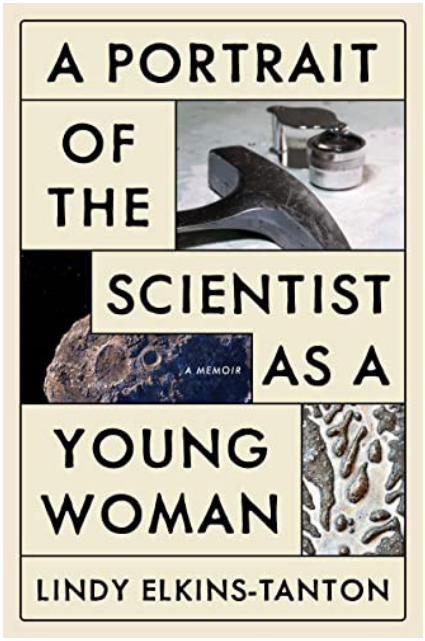
Book Review

A Book Review by Ed Bas

A Portrait of the Scientist As A Young Woman

By Lindy Elkins-Tanton

This author is one of the planetary scientists and the principal investigator of NASA's Psyche mission. Not shabby! She is vice president of the Interplanetary Initiative at Arizona State University.



She wrote in her challenging obstructions of, seemingly, male-oriented studies: … our rocket will launch our spacecraft off the Earth and begin its 3.4-year journey to the asteroid (16) Psyche." A $800 million space mission, "We hope it will work." Fingers-crossed!

She is not known for being an astronomer. Geology is her bag. She is not dumber than a bag of rocks. No jokes for geology. But I can't resist one: What did Sherlock Holmes say when Watson asked what type of rock he was holding? "Sedimentary, my dear Watson."

She wrote about working in Siberia, not outer space nor a telescope. Russian males were skeptical and curiously of her and of course, American women. And she is too friendly with Russians. During this publication, Russia invaded Ukraine, soldiers killed kids and old people, destroyed schools and hospitals. Too bad Siberia is owned by Russia. (I am Ukrainian and I am a human being).

I am fascinated by her words: "Vents would open and spew out fragmented flakes of minerals and glass (the ash) driven in plumes of superheated gas… huge plumes would form and rise into the stratosphere." It's Earth, not an asteroid. Amazingly, "the carbon-rich sediments at the bottom of the ocean, vary over time depending upon where the carbon is coming from."

That reminds me of dinosaurs, more or less. T. Rex's reproduction skeleton settled down in the Cranbrook Institute of Science. Old school could be a new school also. We can understand the asteroids if we research and study our Earth.

I noticed Walmart's website selling Estes model rockets and most specifications under the gender stated: male. It bothers me! It bothers you, too?

The author wrote stoical observations by a scientist. Not a crybaby but "I was building a foundation on which I would later erect new knowledge… a NASA space mission beyond Mars." But she wrote about the difference between positions and wages today to male or female. And her uncle, "thought that aircraft company leadership position was such an outsize opportunity for such a young woman that he literally laughed until he cried." The idea was so ludicrous to his uncle.

"When I was a kid, I thought there was a universal standard of justice." Obviously, not. She wrote cases of harassment and bullying. Her uncle observed, "Being a woman in science is incredibly hard." She agreed: "The topic was implicit, and explicit, bias against women in science."

All in all, the 1960s are the past history. NASA had other reasons of male-oriented astronauts and its careers also. I assume, and I hope, sex genders are neutral toward men or women to their own tailored careers– wages and positions all included. But I am not a scientist nor a Merle Haggard song: "Sing a little bit of these working man blues."

The last chapter is a treat for WASP. Page 237 is the heaviest and more significant for this book. I am not telling you, a spoiler alert, you should read it! The nexus started: "The spacecraft and measurements would be at risk only from energetic… trapped particles in the vicinity of Psyche."

This book is a memoir, not a textbook full of heavy statistics or government-babble abbreviations. That's good. But it should be an index and photos. NASA has a lot of pictures, no copyright. And my taxes helped.

All in all, I graded a B for general readers and only a C for WASP. Why? Because it needs more meat. I read the first 215 pages without NASA or Psyche. She wrote a Concept Study Report, 1,053 pages. Yes, I am interested but her 260-page book was almost finished. The last chapter was a tease? Skin and bones without really muscle. The prologue was Creating a Mission to Space but the book was about her career, health issues, horses and dogs, marriages, etc. Yes, I know it's a memoir but still… I ate the whole thing but I am still hungry. I learned about the Psyche from NASA's official trailer.

Still, I can recommend everyone reading it, especially my granddaughter. A spoonful of sugar helps the medicine go down, Mary Poppins sang. Don't believe everything. It's a plausible subject though. I assume my granddaughter could be a scientist and a young woman (she is 5!) Ad astra!

[Your Name Here]-1

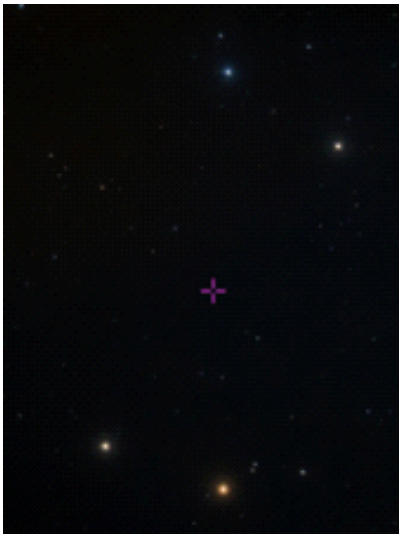
Brad Young, Astronomy Club of Tulsa

One of the joys of sweeping the night sky is the plethora of lines, figures and shapes seen in the star fields. Many groups of stars that you see aren't among the official constellations and are called asterisms. Some are large enough to be seen with the naked eye, and others show up best in a telescope. Quite a few are listed in books and other references, and you probably know many of them already. For instance, the Big Dipper is an asterism. It's part of the constellation Ursa Major but it's not actually a constellation itself. The shape we see as a dipper has been seen by many cultures over time, and given different names and mythology, but the constellation itself includes more stars, and even another asterism, 3 Leaps of the Gazelle.

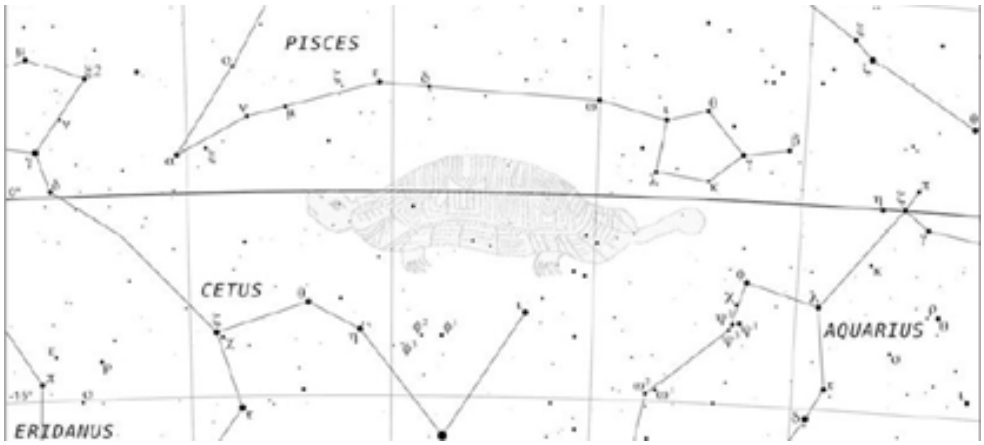
Of course, people see different groups in their own way even today. Asterisms may be generally known or published, part of an obsolete constellation, or unknown (except for in the eye of the beholder). The following examples might encourage you to look for these groups, or sweep along in the sky, making up your own as you see interesting shapes or beauty.

Little Box and Lawn Chair

Over the years, I have found dozens of beautiful little fields and groups and have a few favorites, many from satellite hunting. One is what I call the Little Box. This group of four stars first drew my attention because it is near the First Point of Aries, where the Sun is located at the Spring Equinox. Later, I learned it is also part of an extinct constellation called Testudo, which was shown on star atlases and maps in the West until it was removed with the adoption of the 88 official constellations in 1930. Testudo the Turtle consisted of what I call the Little Box plus a few more stars to the east along the Pisces / Cetus border. The star at the southwest (bottom right) is 30 Pisces.



Little Box



Testudo the Turtle

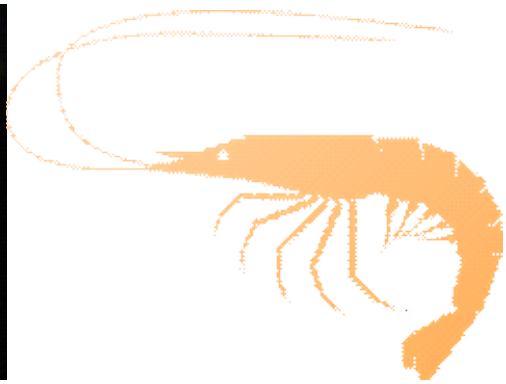
The Little Box is especially useful to me because geosynchronous satellites flare up and become easy to see in autumn. For my latitude, they appear to pass right through the box during early October. I had noticed it long before my interest in satellites, but now I use it to find them every fall. Now that I know its history, I enjoy it all year long.

On the other side of the sky, there is a group of 7th magnitude stars at 10h 21m -5o in Sextans that looks like a lawn chair, and I use it for the same purpose as the flaring satellites pass right through or right next to it. I like to think it is a stellar version of my lawn chair as I sit and look at it. As far as I can find, this is a "Brad" group – not published by others.

The Lawn Chair

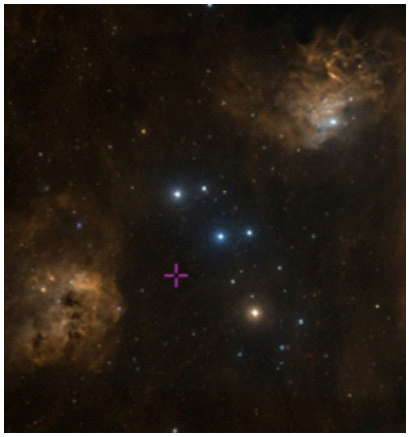
Under the Sea (and Ground)

Other groups abound such as 67, k, u, and 72 Tauri just above the Hyades. It's a group of four stars that look a bit like a shrimp. This winter, Mars has passed by this group three times during its opposition loop. John Chiravalle includes this as part of his asterism the Fishhook in “Pattern Asterisms”, but I see only this part, and as a shrimp. There are lots of asterisms and former constellations with this common shape, such as Gryphites (Shellfish), Hippocampus (Sea Horse), Hirudo (Leech), and Patella (Limpet) to name a few.



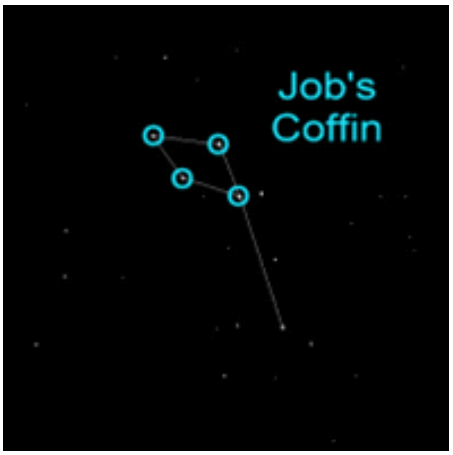
Shrimp

It also resembles the star cluster Melotte 31, also called the Flying Minnow that is near AE Auriga, a runaway star (a star with high proper motion) that lights the Flaming Star Nebula. The group is hard to miss on your way to that object. AE Aur is at the upper right, with its nebula, and the bright star at the south end of the Minnow is 16 Aurigae.



Flying Minnow

All of these resemble Delphinus, the Dolphin, an official constellation which includes its own asterism, Job's Coffin. This asterism is the diamond shape formed by the four bright stars in the head of the Dolphin as shown below.



Snail and a Slice

Terebellum in southeastern Sagittarius is another group, named by Ptolemy, that is not a constellation itself. It consists of four stars (59, 60, 62, ω Sagittarii) and is near Messier 55. Named for a snail (I don't see it), the Chinese had another idea, and called it Dog Territory. It was included in their wide collection of groupings in modern Sagittarius.

Just north of the horns (g and d) of Capricornus, is a little group of four or five stars that looks a bit like a slice of pizza. This little group is made up of 42, 44, 45 Capricornus and three others. In 2022, Saturn was moving through it during its opposition. Classic star charts usually show only 42 plotted (as "d" in this case) and it does not appear to be a known group. And it must be plain cheese, as there are no stars inside the group for toppings. *Note – some sources list the Summer Triangle as the Pizza Slice, but the original name is well established.*

There are uncounted other little groups all over the sky – it would be easy to find groups of your own that resemble a bird or a box or some other object that you can easily remember.

Source: Wikipedia

Pizza Slice

Alternate Views

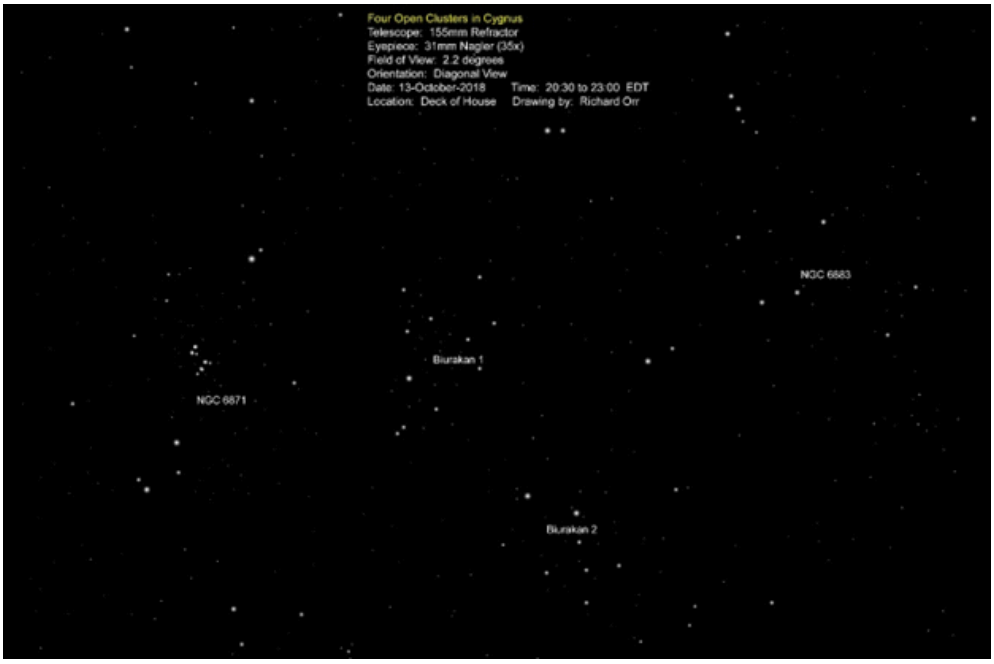
Another way of viewing these groups is to see how other cultures have viewed them, in both location and time. The stars were a fundamental part of the mythology and philosophies of all countries, empires, and even prehistoric tribes. At my website, view information on the Alternate Constellations Observing Program and see the list of resources there on cultural astronomy. There are also other programs on Asterisms and the official Constellations to help you enjoy our sky more. You may find your favorite group there, as an obsolete constellation, or an ancient Akkadian warlord.

Build Your Own Catalog

Deep sky objects can hold the same type of individual objects that only you “know about”. One of my favorite sites to see is the dark nebula leading to the Cocoon Nebula in Cygnus. I start by viewing it naked eye (in a very dark sky) and follow with “zooming in” on the nebula itself with the telescope. I don’t know of an official name (“bradding?”) for this sort of observation, but gradually admiring an object’s surroundings with the eye, or binoculars, and then homing in with power and resolution is a great way to view many deep sky sights. And, in a way, that experience is your own, part of a personal catalog.

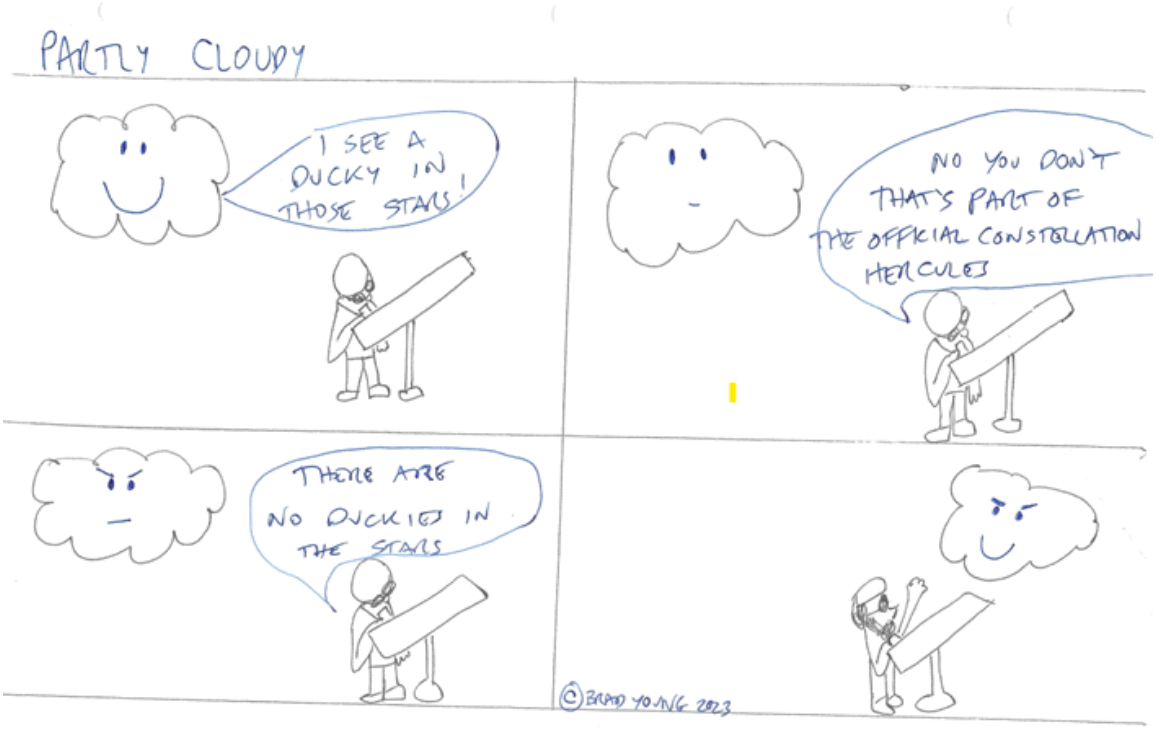
Cocoon Nebula (IC 5146), LDN 1042 and vdB147 in Cygnus (by Jonathan MacCollum)

I learned about this method when I first began observing and discovered the field surrounding NGC 6871 and 6883 along with Biurakan1 and 2 in Cygnus. Although the area contains cataloged open clusters, back then I didn't have good charts (or computer). It seemed to me that the loop de loops, wide double stars, and connecting lines and whorls of stars between all of these objects was something that only I knew about. I returned to that field repeatedly to enjoy the interaction between the clusters and the Milky Way surrounding it.



Drawing by Richard Orr

Sweeping the sky and star fields surrounding a target object is often as rewarding as the target object. There's a lot of interesting stuff out there that may not be cataloged, but it's beautiful nonetheless and near objects that you're looking at anyway. The next time you're observing, look around your object and if there's not a neat clump of wide double stars or a line or circle of colorful field stars. If no one's looking, you can catalog them as [Your Name Here]-1.



Note: all sky images are screenshots from Aladin ***unless otherwise noted.***

Resources:

A great source for the history of obsolete and forgotten Western constellations and asterisms is the set of two books by John Barentine listed in the references below. These groups were inserted by early uranographers to fill the "gaps" between the major constellations, and many have colorful histories and stories, as Barentine presents in an informative and entertaining way:

The Lost Constellations, John C. Barentine ISBN 978-3-319-22794-8
Uncharted Constellations, John C. Barentine ISBN 978-3-319-27618-2

http://www.rocketmime.com/astronomy/fig/UrsaMajor.gif
https://en.wikipedia.org/wiki/Constellation
https://en.wikipedia.org/wiki/AE_Aurigae
https://www.astroshop.eu/magazine/practical-tips/observation/tours-with-binoculars/non-identical-triplets-and-a-flying-fish/i,1250

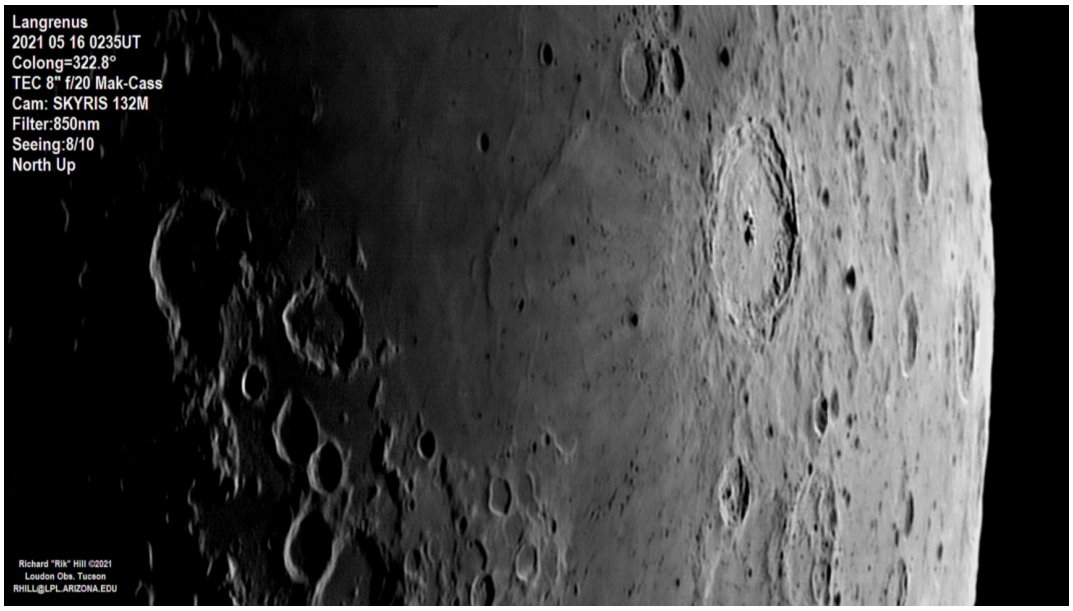
Pattern Asterisms, John A. Chiravalle ISBN 978-1-84628-327-7, p.53

https://en.wikipedia.org/wiki/Omega_Sagittarii
http://www.orrastrodrawing.com/NGC6871-6883-Biurakan1-Biurakan2.html
https://www.astroleague.org/al/obsclubs/AlphabeticObservingClubs.html
https://hafsnt.com/index.php/alternate-constellations/
https://astronomy.com/magazine/phil-harrington/2020/09/a-dolphins-tale
https://en.wikipedia.org/wiki/Dipper_(Chinese_constellation)
https://twitter.com/astrogeo/status/1297682343939858432
https://www.darkflats.com/Deep-Sky/Cocoon/Cocoon%20OSC.L3.60x240s.Solved.DBE.BN.CC.NR.HSVR.ArcSin.MS.LHE.DeconStars.LSLHE.MMTNR.MTStars.NR.Draft2.png

Over the Moon

with Rik Hill

Langrenus Ignored

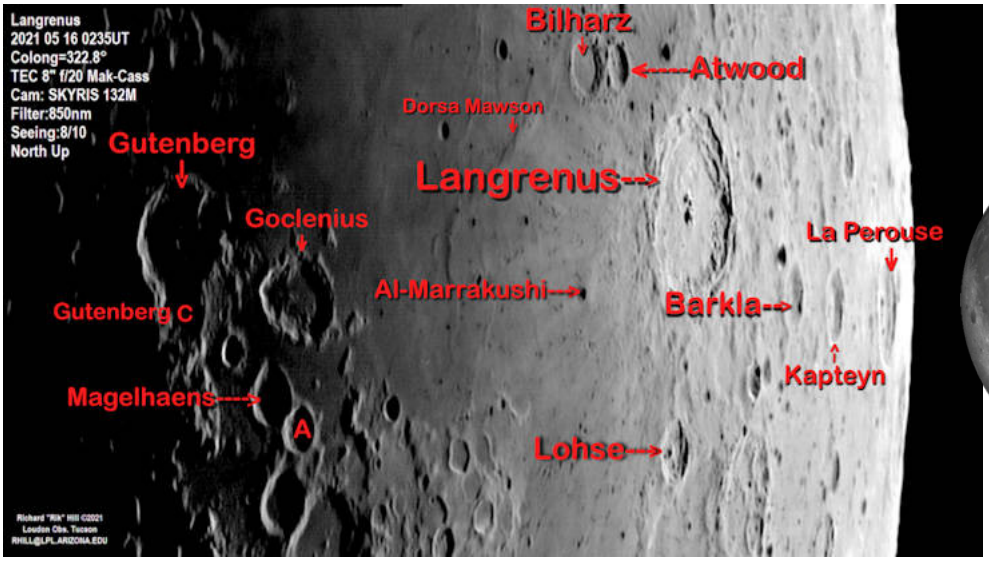


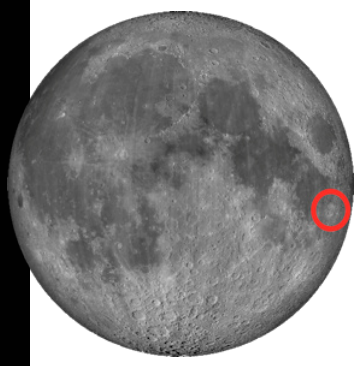
Early in every lunation the spectacular crater Langrenus is seen on the eastern shore of Mare Fecunditatis. Here it is only a little more than 4 days past new moon and the great crater Langrenus (138km diameter) is clearly seen even in binoculars! Unfortunately it is usually overshadowed by its bigger brother Petavius (182km) to the south, with the huge rima, and often overlooked. To the west (left) of Langrenus are several large wrinkle ridges or dorsae. Dorsa Mawson is the northern branch that points to two craters on the upper edge of this image, Bilharz (44km) on the left and Atwood (31km) on the right it makes a sudden angle heading due south. Notice the shadow filled crater west of Langrenus. This is Al-Marrakushi (8km) and it's surrounded by 1-5km secondary craters formed from the Langrenus impact. Take some time to look up this region on LROC Quick Map and look at all the odd shape of these craters formed from low velocity impacts! You can see some of that if you expand this image to 100% on your browser.

Moving east from Langrenus, heading for the limb, we see three craters in a row. The first is Barkla (40km) followed by the larger Kapteyn (48km) and the last, largest one, very foreshortened and very near the limb is La Pérouse (80km). The isolated crater due south of Langrenus is a nicely terraced Lohse (43km). A small crater with a clear central peak.

On the western shore of Mare Fecunditatis is a collection of craters just coming into the sunlight. The pear-shaped crater farthest west (left) is Gutenberg (70km) with Gutenberg C (45km) being the appendage to the south. The very odd looking crater to the right of it is Gloclenius (73km) with Magelhaens (37km) and Magelhaens A (19km) just below. Watch these as the sun rises on them over the course of an evening.

This image was made from portions of two 1800 frame AVIs stacked with AVIStack 2 (IDL), assembled with MS-Ice and final processed with GIMP and IrfanView.





Location Maps by Ralph DeCew

History S.I.G.

February 1994

With the advent of desktop publishing (and the possible use of commercial templates), cover images to comment on have rather disappeared. One comment that could be made is while perusing the covers of this and the next year, it looks like the editor was experimenting with various fonts to adorn the issue with. The graphics consist mainly of the WAS, WASP and the Astronomical League logos.

"A Few Words From Your New President" by Jeff Bondono leads off the issue with comments of goals he had for the club. "Journal Roundup" by Scott Jorgensen featuring comments on articles he gleaned from various sources is followed by "Computer Chatter by Larry F. Kalinowski where he manages to sneak in a bit of astronomy news. Some imports: "A Little Bit of Lore - Orion's stars" (no author given, I suspect copy and paste – Ed) and Foreign Exchange "How to Draw Clusters" by Dieter Klatt, Oldenburg, Germany.

We finish the issue with "Editorial Comment" by Joe Mihalick where the 1993 WAS Awards are named and a plug for star parties and a Word Find puzzle.

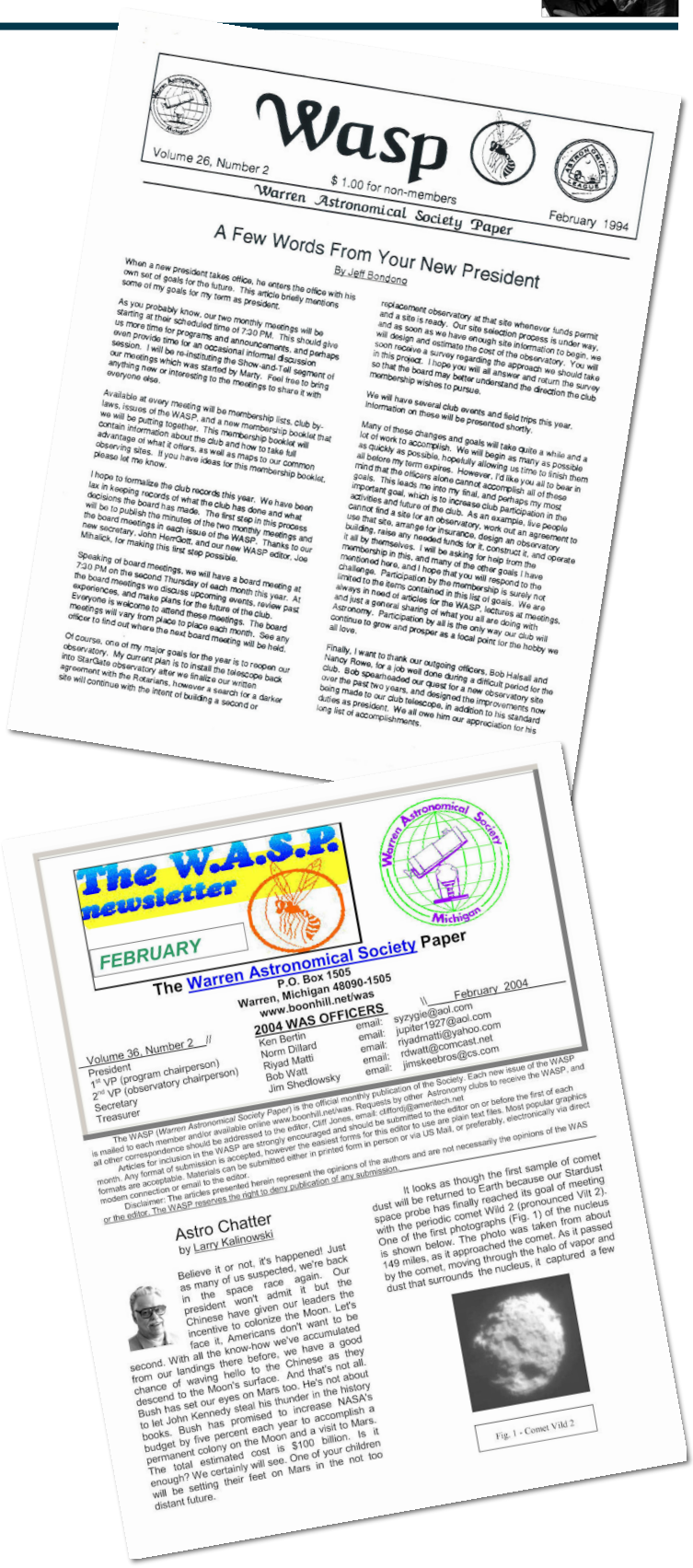
February 2004

In this issue, "Astro Chatter" by Larry F. Kalinowski is the lead, wherein we learn how to pronounce the name Wild 2. He also adds a bit of club news, for which the chief scanner is grateful.

An info-graphic of "Descent to Mars (Spirit)" gets a page. "The Swapshop" -a classified section run by Larry Kalinowski and a run down of the door prize distribution from the annual banquet follow. Then there are two "Minutes of Meetings" by Bob Watt, Secretary: the Cranbrook Meeting 1/5/04 and the Macomb Meeting 1/15/04.

NASA Space Place article Compliments of Nancy Leon of JPL/NASA Flying in Formation by Patrick L. Barry fills out the issue.

Dale Thieme,
Chief Scanner



Wasp

Volume 26, Number 2 — $ 1.00 for non-members — February 1994

Warren Astronomical Society Paper

A Few Words From Your New President

By Jeff Bondono

When a new president takes office, he enters the office with his own set of goals for the future. This article briefly mentions some of my goals for my term as president.

As you probably know, our two monthly meetings will be starting at their scheduled time of 7:30 PM. This should give us more time for programs and announcements, and perhaps even provide time for an occasional informal discussion session. I will be re-instituting the Show-and-Tell segment of our meetings which was started by Marty. Feel free to bring anything new or interesting to the meetings to share it with everyone else.

Available at every meeting will be membership lists, club by-laws, issues of the WASP, and a new membership booklet that we will be putting together. This membership booklet will contain information about the club and how to take full advantage of what it offers, as well as maps to our common observing sites. If you have ideas for this membership booklet, please let me know.

I hope to formalize the club records this year. We have been lax in keeping records of what the club has done and what decisions the board has made. The first step in this process will be to publish the minutes of the two monthly meetings and the board meetings in each issue of the WASP. Thanks to our new secretary, John HemDott, and our new WASP editor, Joe Mihalick, for making this first step possible.

Speaking of board meetings, we will have a board meeting at 7:30 PM on the second Thursday of each month this year. At the board meetings we discuss upcoming events, review past experiences, and make plans for the future of the club. Everyone is welcome to attend these meetings. The board meetings will vary from place to place each month. See any officer to find out where the next board meeting will be held.

Of course, one of my major goals for the year is to reopen our observatory. My current plan is to install the telescope back into StarGate observatory after we finalize our written agreement with the Rotarians, however a search for a darker site will continue with the intent of building a second or replacement observatory at that site whenever funds permit and a site is ready. Our site selection process is under way, and as soon as we have enough site information to begin, we will design and estimate the cost of the observatory. You will soon receive a survey regarding the approach we should take in this project. I hope you will all answer and return the survey so that the board may better understand the direction the club membership wishes to pursue.

We will have several club events and field trips this year. Information on these will be presented shortly.

Many of these changes and goals will take quite a while and a lot of work to accomplish. We will begin as many as possible as quickly as possible, hopefully allowing us time to finish them all before my term expires. However, I'd like you all to bear in mind that the officers alone cannot accomplish all of these goals. This leads me into my final, and perhaps my most important goal, which is to increase club participation in the activities and future of the club. As an example, if we people cannot find a site for an observatory, work out an agreement to use that site, arrange for insurance, design an observatory building, raise any needed funds for it, construct it, and operate it all by themselves. I will be asking for help from the membership in this, and many of the other goals I have mentioned here, and I hope that you will respond to the challenge. Participation by the membership is surely not limited to the items contained in this list of goals. We are always in need of articles for the WASP, lectures at meetings, and just a general sharing of what you all are doing with Astronomy. Participation by all is the only way our club will continue to grow and prosper as a local point for the hobby we all love.

Finally, I want to thank our outgoing officers, Bob Halsall and Nancy Rowe, for a job well done during a difficult period for the club. Bob spearheaded our quest for a new observatory site over the past two years, and designed the improvements now being made to our club telescope, in addition to his standard duties as president. We all owe him our appreciation for his long list of accomplishments.

The W.A.S.P. newsletter

FEBRUARY

Warren Astronomical Society Michigan

The Warren Astronomical Society Paper

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Volume 36, Number 2 // February 2004

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The WASP (Warren Astronomical Society Paper) is the official monthly publication of the Society. Each new issue of the WASP is mailed to each member and/or available online www.boonhill.net/was. Requests by other Astronomy clubs to receive the WASP, and all other correspondence should be addressed to the editor, Cliff Jones, email: clifford@ameritech.net

Articles for inclusion in the WASP are strongly encouraged and should be submitted to the editor on or before the first of each month. Any format of submission is accepted, however the easiest forms for this editor to use are plain text files. Most popular graphics formats are acceptable. Materials can be submitted either in printed form in person or via US Mail, or preferably, electronically via direct modem connection or email to the editor.

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

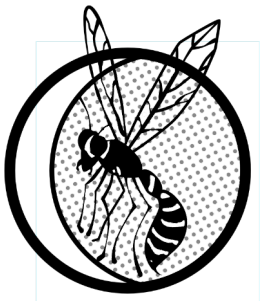
Astro Chatter

by Larry Kalinowski

Believe it or not, it's happened! Just as many of us suspected, we're back in the space race again. Our president won't admit it, but the Chinese have given our leaders the incentive to colonize the Moon. Let's face it, Americans don't want to be second. With all the know-how we've accumulated from our landings there before, we have a good chance of waving hello to the Chinese as they descend to the Moon's surface. And that's not all. Bush has set our eyes on Mars too. He's not about to let John Kennedy steal his thunder in the history books. Bush has promised to increase NASA's budget by five percent each year to accomplish a permanent colony on the Moon and a visit to Mars. The total estimated cost is $100 billion. Is it enough? We certainly will see. One of your children will be setting their feet on Mars in the not too distant future.

It looks as though the first sample of comet dust will be returned to Earth because our Stardust space probe has finally reached its goal of meeting with the periodic comet Wild 2 (pronounced Vilt 2). One of the first photographs (Fig. 1) of the nucleus is shown below. The photo was taken from about 149 miles, as it approached the comet. As it passed by the comet, moving through the halo of vapor and dust that surrounds the nucleus, it captured a few

Fig. 1 - Comet Wild 2



Texas Star Party 2023

Registration for:

TSP 2023 10 am May 14th, to Sunday 10 am, May 21, 2023

Is OPEN!

Please go online at https://texasstarparty.org/register/. Login, confirm your profile information and register.

Below, all of you will discover important information regarding TSP 2023.

Please be aware that the current registration period will end on Friday February 17th, 2023 at 11:59pm (23:59 Hours) Central Daylight Time.

The great tradition of Dark Sky Observing continues with the 43rd Annual TEXAS STAR PARTY, May 14 to 21, 2023 near Fort Davis, Texas!

IMPORTANT DATES TO KNOW

- Friday, Feb 17th – close regular registrations.
- Friday, Feb 17th through Monday, Feb 20th – run the random lottery and start housing assignments
- Monday, Feb 20th through Sunday, March 5th – do housing assignments (this gives us two weeks)
- Monday, March 6th – confirmation emails go out to regular registrants
- Wednesday, March 8th – late registration open and late housing assignments made (whatever is left)

Late Registration will close April 28, 2023.

Last day to cancel and receive a refund is April 28, 2023 at 11:59 pm CDT. Your email must be time and date stamped at or prior to 11:59 pm (23:59 hours) Central Daylight Saving Time to receive a refund. Special Conditions apply to refunds

The Texas Star Party is accepting registrations for TSP 2023. Please go to https://texasstarparty.org/register/ and log in to your TSP account to begin the process.

New for this year:

A. Application and Registration are now combined into one registration form, and TSP. Payment for registrations is due at the time of registration.

B. Please consider making a donation to one of "Fund Programs". Donations made to these programs are restricted to be used only for these programs. The registration form includes the ability to make donations to:

1. Friends of TSP Fund Program
2. John Wagoner Memorial Student Astronomer Award Fund Program
3. TSP Youth Outreach Fund Program
4. TSP Operations Fund Program

Items that you can purchase when you register:

C. You can purchase these items while registering for TSP 2023:

1. TSP 2023 Group Photo
2. TSP 2023 Hat
3. TSP 2023 Official T-Shirt

You can purchase these items when completing your registration form.

You can pick your items up during TSP 2023 at the Sales and Information Desk in the meeting hall.

D. Cancellation and Refund Deadline is April 25, 2023

CRANBROOK INSTITUTE OF SCIENCE

Michigan's Museum of Natural History

FEBRUARY 2023

Notable Sky Happenings

Feb. 1 - 7

The bright star above the Moon on the evening of the 3rd is Pollux in Gemini. The "twin" star, Castor, is above (W eve.). The bright star to the right of the Moon on the 6th is Regulus, the "heart" of Leo the lion (E evening).

Feb. 8 - 14

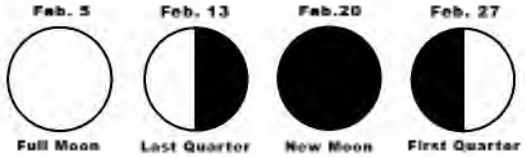
The Moon is above and to the left of Spica on the 11th (SSW predawn) and above and to the right of Antares on the 14th (SSE predawn).

Feb. 15 - 21

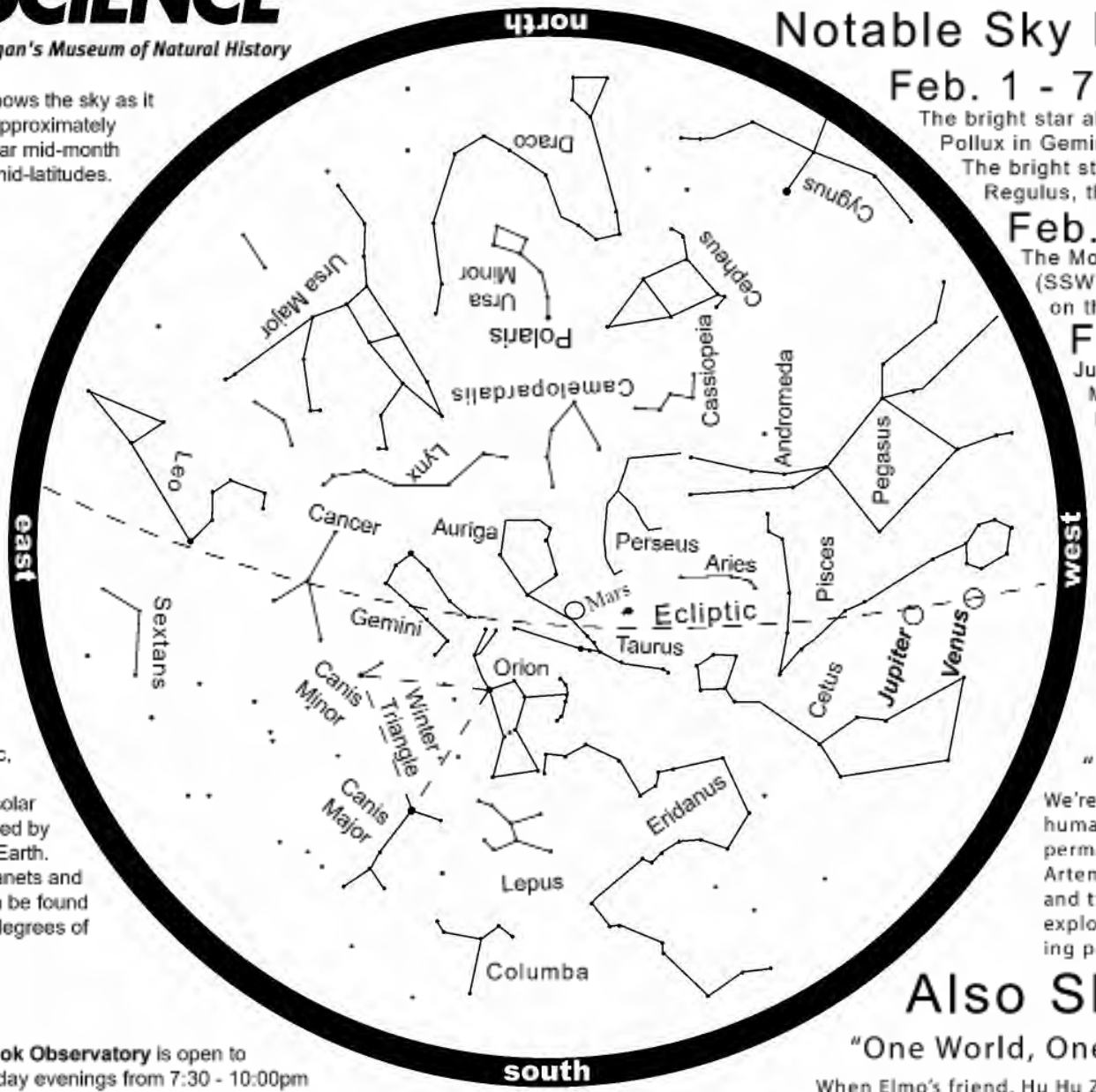
Jupiter is above Venus which is above the crescent Moon on the 21st (WSW evening twilight - use binoculars).

Feb. 22 - 29

Moon is to the left of Jupiter, Venus is below on the 22nd (WSW evening twilight). Moon is to the right of Mars on the 27th (S evening).



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

"Forward to the Moon"

We're ready to start a new chapter in the history of human exploration and take our first steps towards a permanent presence om the Moon. NASA's 21st century Artemis program, named after the Greek Moon Goddess and twin of Apollo, is the next step in our mission to explore the universe. A Moon base will be the launching pad for the next target: the planet Mars.

Also Showing

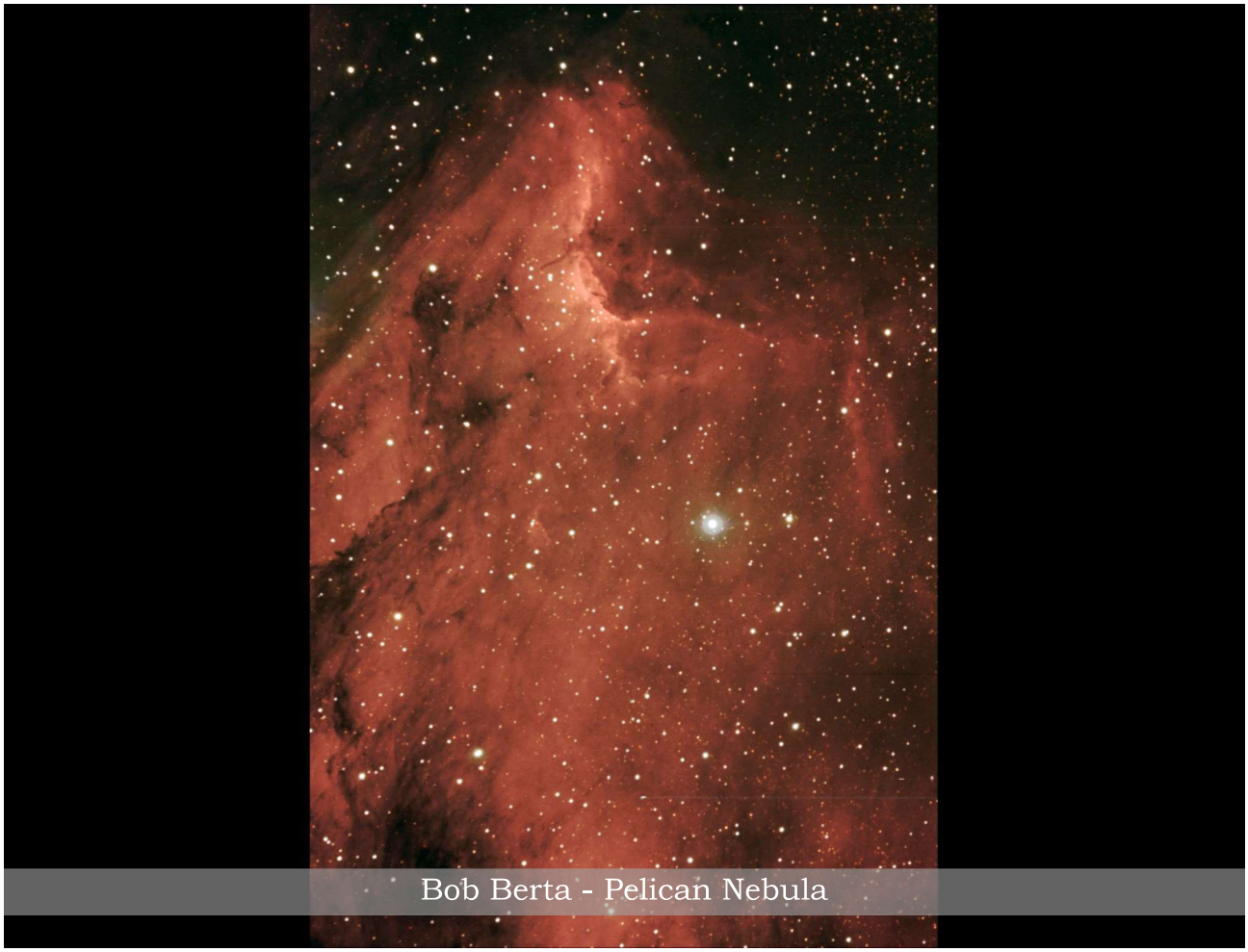
"One World, One Sky: Big Bird's Adventure"

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



Bob Berta - Pelican Nebula

Febmary 2023

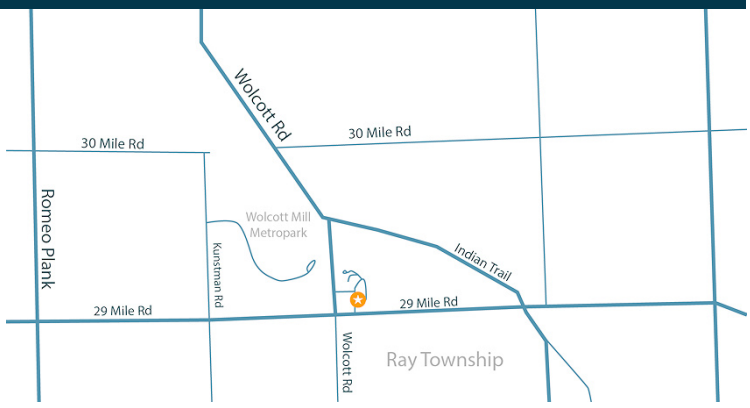
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2 Groundhog day	3	4 Moon at Apogee: 406476 km
5 FULL MOON	6 Cranbrook	7	8	9	10	11
12	13	14 Valentine's Day	15	16 Macomb	17	18 Maha Shivaratri
19 Moon at Perigee: 358267 km	20 NEW MOON President's Day	21	22	23	24	25 Stargate Open House
26	27	28				

Stargate Observatory

Monthly Free Astronomy Open House and Star Party
6:00 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

Stargate Observatory Report for January 28, 2023

Riyad opened around 530 had 2 visitors before a group of girl scouts (12-16 total) made their way over. It was cloudy so he talked about astronomy and telescopes. I helped him close up around 730.

Next Open House is February 25th.

Jeff MacLeod,
2nd VP
Stargate

Treasury Report

Treasurer's Report for January 31, 2023

BOA account:

Balance: $30,352.32

Deposits: 1245.50

Expense (Webex)..... 15.90

PayPal Account:

Balance: $343.62

Received: 172.73

Paid 338.05

(postage)

Total Paid Memberships..... 55

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 February 2023

Add one hour for Daylight Saving Time

Source:

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

Date	Time (h:m)	Event
3	14:47	Pollux 1.9°N of Moon
4	3:55	Moon at Apogee: 406476 km
5	13:29	FULL MOON
6	12:44	Regulus 4.5°S of Moon
10	23:23	Spica 3.6°S of Moon
12	2:31	Moon at Descending Node
13	11:01	LAST QUARTER MOON
14	13:09	Antares 1.9°S of Moon
15	15:00	Mercury at Aphelion
16	11:00	Saturn in Conjunction with Sun
18	15:53	Mercury 3.6°N of Moon
19	4:06	Moon at Perigee: 358267 km
20	2:06	NEW MOON
22	2:57	Venus 2.1°N of Moon
22	16:58	Jupiter 1.2°N of Moon: Occn.
24	13:56	Moon at Ascending Node
26	9:42	Pleiades 2.1°N of Moon
27	3:06	FIRST QUARTER MOON
27	23:32	Mars 1.1°S of Moon: Occn.

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

Adrian Bradley,
Treasurer

Meeting Minutes

WARREN ASTRONOMICAL SOCIETY
MINUTES OF VIRTUAL BOARD MEETING
JANUARY 2, 2023 @ 6:30PM

Meeting called to order @ 6:30PM. Officers in attendance: Bob Trembley, Dale Partin, Jeff MacLeod, Mark Kedzior, Adrian Bradley, Kevin McLaughlin, Dale Thieme – quorum present.

OFFICER REPORTS:

President Bob Trembley – None.

1st VP Dale Partin – Looking for speakers for 2023 meetings – need speaker for February 16 Macomb meeting. Meeting with Associate Dean of Science at Macomb for possibility of securing a large room in the basement of library for in person meetings for third Thursday of the month.

2nd VP Jeff MacLeod had nothing to report but coordinating with observatory transition with outgoing 2nd VP Riyad Matti.

Secretary Mark Kedzior reported December minutes are in WASP – all banquet door prizes have been distributed/shipped to winners – thank you letters were mailed out to all door prize donors – total of six (6) 2023 WAS calendars are still available for purchase – correspondence sent out to board in regard to Big Dob telescope clamps upgrade.

Treasurer Adrian Bradley gave account balances that can be found in January 2023 WASP.

Outreach – Kevin McLaughlin reported the Metroparks are looking to the WAS to support meteor shower events on October 7th at Stargate and October 8 at Indian Springs Metropark – also reported that the Veen Observatory in Grand Rapids is closed until March for repairs.

Publications – Dale Thieme reports the January 2023 WASP is on line – 2023 Annual mailer for membership will be sent out shortly.

OLD BUSINESS:

The Yahoo! IO account will now be billed to the WAS. Website revamp – Dale Thieme reports that Jonathan Kade will be meeting with Dale in Florida to facilitate the transition to WAS ownership. The WAS is still in need of volunteer to be Audio-Visual Coordinator for meetings – discussion – Kevin McLaughlin volunteered to work with Adrian Bradley at next Cranbrook meeting to document the technology setup process for the position. A volunteer is needed for a Social Media Factotum for WAS to facilitate Facebook/Twitter/Meetup sites.

NEW BUSINESS:

GLAAC WAS Representation is needed. Paul Strong Scholarship – Dale Partin will contact Macomb for possible scholarship candidates for this year's award. Astronomical League – Adrian Bradley volunteered to continue being the AL representative for the WAS. Discussion on WAS Mailer costs – motion by Adrian Bradley to budget $250 for this year's mailing – second by Dale Partin – motion passed unanimously. Discussion on WAS trifolds/business cards for publicity – motion by Adrian Bradley to budget $200 for WAS business cards -second by Dale Thieme – motion passed unanimously. Discussion Group meetings – discussion on having this meeting be virtual on selected dates. Bob Trembley contacted Paul Konkolesky of the Warren Civic Center Library about meeting space for Macomb meeting – would not be possible at Warren Library since building closes at 8PM – suggested that we contact Warren Community Center for availability of the auditorium. Meeting being set up with Steve Siebert of the Metroparks to discuss with their events committee on ideas for regular programming with the WAS. Discussion on maximum amount of petty cash that should be on hand. Motion by Dale Thieme to limit petty cash on hand to $200 – second by Dale Partin – motion passed unanimously.

Motion to adjourn by Dale Thieme – second by Dale Partin.

Meeting adjourned at 7:18 PM.

Respectfully submitted,
Mark Kedzior
Secretary, WAS

WARREN ASTRONOMICAL SOCIETY
CRANBROOK (Virtual) MEETING
JANUARY 2, 2023 7:30PM

Meeting called to order for virtual Cranbrook meeting at 7:30PM by President Bob Trembley. Persons in attendance – 24 WebEx -& YouTube attendance – 6@ 8:30PM).

OFFICER REPORTS:

President – None.

1st VP Dr. Dale Partin gave upcoming presentation schedule as in in need of speakers for upcoming meetings.

2nd VP Jeff MacLeod gave December Open House report from outgoing 2nd VP Riyad Matti. The next Open House is January 28th.

Treasurer Adrian Bradley gave report on WAS accounts which can be found in January WASP.

Secretary Mark Kedzior reported seven 2023 WAS Calendars are still available for purchase.

Outreach – none.

Publications Chair Dale Thieme reported the WASP is up on line.

OBSERVING REPORTS:

Ken Bertin and Riyad Matti were at Stargate on December 7th to observe occultation of Mars but were clouded out. Ken also observed the total lunar eclipse with grandson.

SPECIAL INTEREST GROUPS:

Bob Trembley showed recent videos of solar activity – sunspots and flares. Double Star Group – Riyad Matti will be using newly acquired spectroscopy equipment at the Open House if conditions are favorable

SHORT PRESENTATION:

Ms. Stacy Welborne, an amazing young lady from Indiana with disabilities, gave a wonderful presentation titled "Stacy's Amazing Astronomy". At the age of nine, she saw first hand the transit of Venus on June 4, 2012, and was hooked on astronomy. She also saw the Great Total Solar Eclipse on August 17, 2017 in Tennessee. She does astronomy presentations as a public service in schools with children, and won a Blue Ribbon for her astronomy display at the 2021 Indiana State Fair. She was accepted as a NASA Solar System Ambassador in December 2021. Questions and discussion followed her inspiring presentation.

To see her presentation in its entirety, go to:

https://www.youtube.com/warrenastro

MAIN PRESENTATION:

Ken Bertin gave his annual presentation: "Astronomy News Roundup for 2022" – he gave his thirty most important astronomy related news events of the year. Questions and discussion followed his well-researched news. To see his presentation in its entirety, go to:

https://www.youtube.com/warrenastro

Meeting ended at 9:25PM.

Respectfully submitted,
Mark Kedzior
Secretary

WARREN ASTRONOMICAL SOCIETY
MACOMB (VIRTUAL) MEETING
JANUARY 19, 2023 7:30PM

Meeting called to order at 7:30 PM by President Bob Trembley. WebEx attendance – 23 & YouTube –6@ 8:15 PM).

OFFICER REPORTS:

President Bob Trembley encouraged members to send in their renewal membership dues – still in need of a volunteer for AV Tech for meeting setup – Metroparks will be listing dates of our Open Houses on their website to promote astronomy and the WAS.

1st VP Dr. Dale Partin reports we are still in need of speakers for upcoming meetings.

2nd VP Jeff MacLeod reports there will be an Open House on Saturday, January 28th.

Treasurer Adrian Bradley gave brief report on WAS accounts.

Secretary Mark Kedzior reports there are six 2023 WAS Calendars available to purchase.

No report from Outreach.

Publications Chair Dale Thieme is preparing the February WASP and encourages those wishing to send in submissions to do so.

OBSERVING REPORTS:

David Levy (from Arizona) reports the sun is extremely active, observing one large sunspot complex, 83 sunspots and 15 prominences - Also observed incoming Comet ZTF. He reported the passing of rock legend David Crosby, and read a quotation from Ecclesiastes in the Bible, which were the words used in Pete Seeger and the Byrds' famous song, "Turn, Turn, Turn". Bob Trembley shared recent images of sunspots and solar flares. Riyad Matti reports they will be using our newly acquired spectroscopy equipment to observe spectra of double stars at the January 28th Open House. Bob Trembley also reported on the approaching "green" comet - C/2022E3 (ZTF). Adrian Bradley shared nightscape images taken in Oscoda – also Saginaw Bay images of the Pelican Nebula – the North American Nebula – approaching circumpolar Comet ZTF – the "green" comet.

MAIN PRESENTATION:

Dr. Dale Partin gave his well-researched presentation entitled "The Christmas Star". Dr. Dale's research gave a historical timeline background (King Herod, the Magi, period writings), and a range of years and data when astronomical events took place (close conjunctions of the planets Venus, Jupiter, Mars) to try to pinpoint an approximate year when Jesus was born.

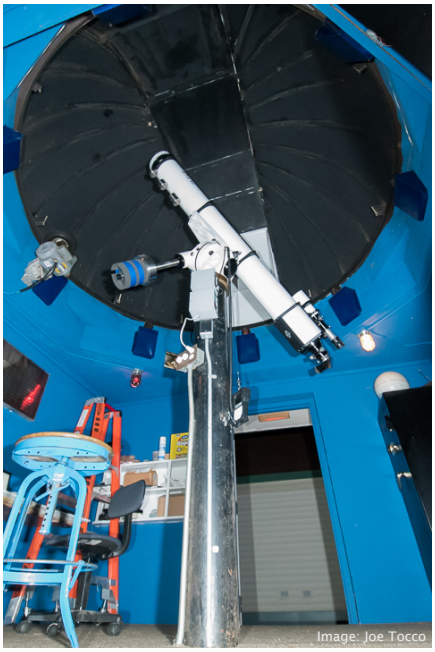
Questions and discussion followed his excellent presentation.

To see this presentation in its entirety, go to:

https://www.youtube.com/warrenastro

Meeting ended at 9:30 PM.

Respectfully submitted,
Mark Kedzior
Secretary
Warren Astronomical Society



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!

Spot the King of Planets: Observe Jupiter

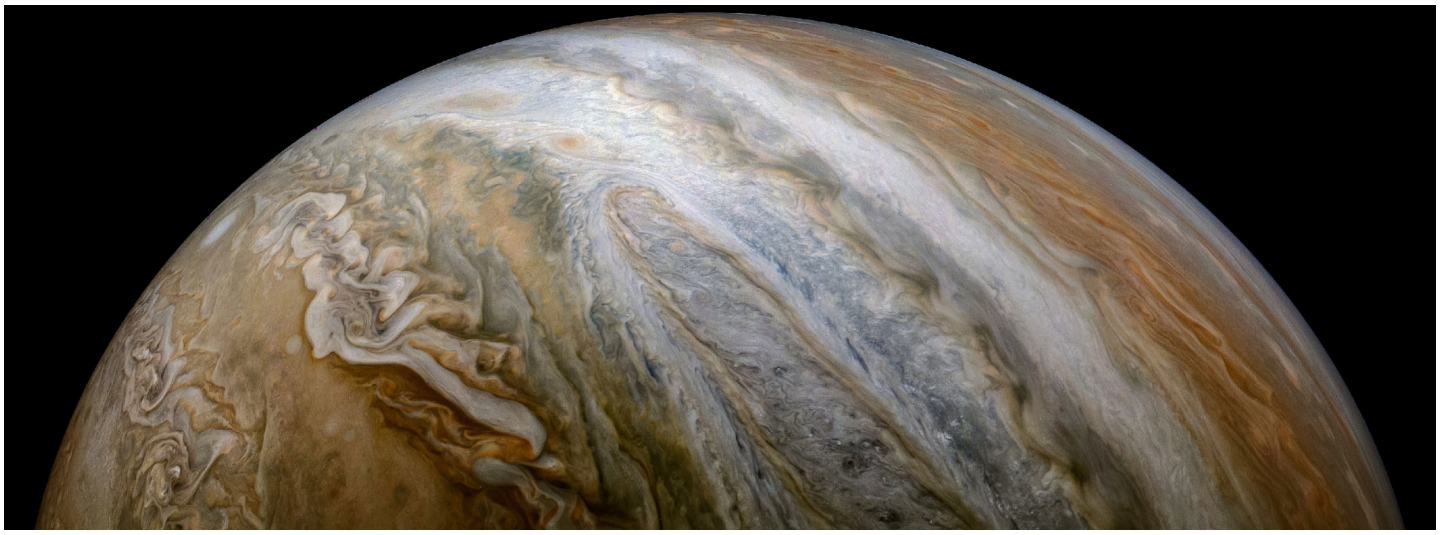
David Prosper

Jupiter is our solar system's undisputed king of the planets! Jupiter is bright and easy to spot from our vantage point on Earth, helped by its massive size and banded, reflective cloud tops. Jupiter even possesses moons the size of planets: Ganymede, its largest, is bigger than the planet Mercury. What's more, you can easily observe Jupiter and its moons with a modest instrument, just like Galileo did over 400 years ago.

Jupiter's position as our solar system's largest planet is truly earned; you could fit 11 Earths along Jupiter's diameter, and in case you were looking to fill up Jupiter with some Earth-size marbles, you would need over 1300 Earths to fill it up – and that would still not be quite enough! However, despite its awesome size, Jupiter's true rule over the outer solar system comes from its enormous mass. If you took all of the planets in our solar system and put them together they would still only be half as massive as Jupiter all by itself. Jupiter's mighty mass has shaped the orbits of countless comets and asteroids. Its gravity can fling these tiny objects towards our inner solar system and also draw them into itself, as famously observed in 1994 when Comet Shoemaker-Levy 9, drawn towards Jupiter in previous orbits, smashed into the gas giant's atmosphere. Its multiple fragments slammed into Jupiter's cloud tops with such violence that the fireballs and dark impact spots were not only seen by NASA's orbiting Galileo probe, but also observers back on Earth!

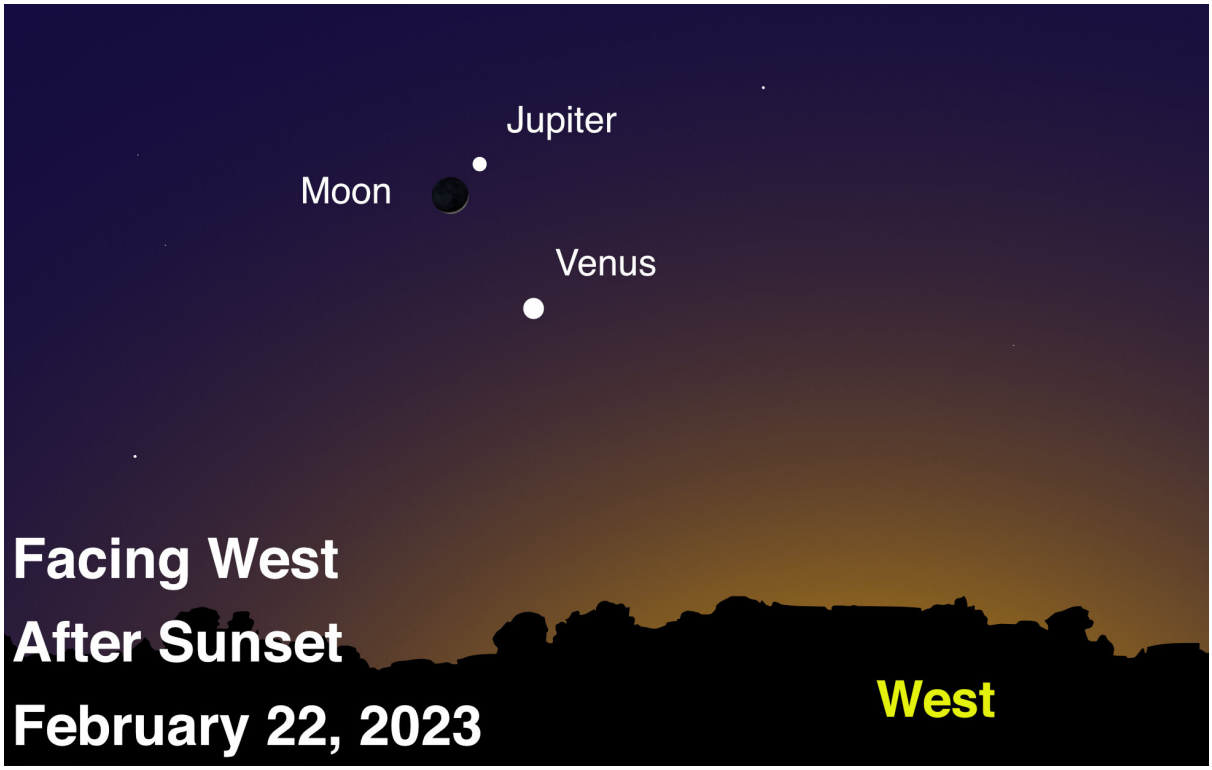
Jupiter is easy to observe at night with our unaided eyes, as well-documented by the ancient astronomers who carefully recorded its slow movements from night to night. It can be one of the brightest objects in our nighttime skies, bested only by the Moon, Venus, and occasionally Mars, when the red planet is at opposition. That's impressive for a planet that, at its closest to Earth, is still over 365 million miles *(587 million km)* away. It's even more impressive that the giant world remains very bright to Earthbound observers at its furthest distance: 600 million miles *(968 million km)*! While the King of Planets has a coterie of around 75 known moons, only the four large moons that Galileo originally observed in 1610 – Io, Europa, Ganymede, and Callisto – can be easily observed by Earth-based observers with very modest equipment. These are called, appropriately enough, the *Galilean moons*. Most telescopes will show the moons as faint star-like objects neatly lined up close to bright Jupiter. Most binoculars will show at least one or two moons orbiting the planet. Small telescopes will show all four of the Galilean moons if they are all visible, but sometimes they can pass behind or in front of Jupiter, or even each other. Telescopes will also show details like Jupiter's cloud bands and, if powerful enough, large storms like its famous Great Red Spot, and the shadows of the Galilean moons passing between the Sun and Jupiter. Sketching the positions of Jupiter's moons during the course of an evening - and night to night – can be a rewarding project! You can download an activity guide from the Astronomical Society of the Pacific at bit.ly/drawjupitermoons

NASA's Juno mission currently orbits Jupiter, one of just nine spacecraft to have visited this awesome world. Juno entered Jupiter's orbit in 2016 to begin its initial mission to study this giant world's mysterious interior. The years have proven Juno's mission a success, with data from the probe revolutionizing our understanding of this gassy world's guts. Juno's mission has since been extended to include the study of its large moons, and since 2021 the plucky probe, increasingly battered by Jupiter's powerful radiation belts, has made close flybys of the icy moons Ganymede and Europa, along with volcanic Io. In 2024 NASA will launch the Europa Clipper mission to study this world and its potential to host life inside its deep subsurface oceans in much more detail. Find the latest discoveries from Juno and NASA's missions at nasa.gov.



This stunning image of Jupiter's cloud tops was taken by NASA's Juno mission and processed by Kevin M. Gill. You too can create amazing images like this, all with publicly available data from Juno. Go to missionjuno.swri.edu/junocam to begin your image procession journey – and get creative!

Full Image Credit: NASA/JPL-Caltech/SwRI/MSSS; Processing: Kevin M. Gill, license: CC BY 2.0) https://creativecommons.org/licenses/by/2.0/ Source: https://apod.nasa.gov/apod/ap201123.html



Look for Jupiter as it forms one of the points of a celestial triangle, along with Venus and a very thin crescent Moon, the evening of February 22, 2023. This trio consists of the brightest objects in the sky – until the Sun rises! Binoculars may help you spot Jupiter's moons as small bright star-like objects on either side of the planet. A small telescope will show them easily, along with Jupiter's famed cloud bands. How many can you count? Keep watching Jupiter and Venus as the two planets will continue to get closer together each night until they form a close conjunction the night of March 1. Image created with assistance from Stellarium.

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.