The W.A.S.P.

Volume 58 Issue 4

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The Warren Astronomical Society Publication

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 7:00 p.m.

First Monday meeting:	Third Thursday meeting:
Cranbrook: Institute of Science	Macomb Community College
1221 North Woodward Ave	South campus, Bldg. E, Room 208
Bloomfield Hills, Michigan	14600 Twelve Mile Rd.
	Warren, Michigan

Membership and Annual Dues

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

Astronomical League (optional) $9.00

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

About the Cover

Some say the sun is starting the solar minimum side of the cycle. Not so fast, Bucky. The sun isn't quite done showing off with coronal ejections and amazing us with the displays.

The editor's sister, Lynn Czarniawski, went on an aurora hunting trip in March in Norway. She was not disappointed. This is one of the photos she took of some aurora activity during her Norwegian trip. She even had one that looked like the veil was right overhead (see next page.)

Be sure to join us at the Macomb April 16th meeting when Janet Hart of the University of Windsor presents a talk on Auroras.

Field of View

I'm a purist when it comes to films. I feel ninety minutes is sufficient for a good old-fashioned crowd-pleaser, though I'm willing to let a prestige picture stick around for two hours if it feels warranted. Thus, when you tell me a popcorn flick is around two-and-a-half hours long, my immediate reaction is No.

Well, my observing companion Jonathan and I went to see Project Hail Mary regardless. I knew nothing of the plot beyond the premise of the first five minutes, though I immediately figured out one of the twists from the pre-movie commercials that played before the trailers. C'mon, Hollywood. Otherwise I was blissfully, as they say, unspoiled.

And I enjoyed it! It's a well-made, well-acted, bang-up crowd-pleaser of a space-themed film, though the falling action contained one too many "edge of the seat" crises that didn't in fact put me on the edge of my seat. Honestly, they could've cut half an hour from the runtime and I would've been a happy customer indeed. That said, I'd highly recommend it for those who want the fun of a true Space Movie.

(That said, I preferred The Martian.)

Project Hail Mary, Four moons out of five

And I get to dust off my rating moons—Ed.

The overhead shot of the Aurora the editor's sister, Lynn Czarniawski took.

Macomb Community College Foundation
Supporting The Mission Of Macomb
Discover. Connect. *Advance.*™

February 2026

Warren Astronomical Society, Inc
Dale R. Partin, Ph.D., Scholarship/Program Manager
P.O. Box 1505
Warren, MI 48090-1505

Dear Mr Partin,

I am honored to thank you, on behalf of the Macomb Community College Foundation, for your role in ensuring that Macomb students succeed in their educational goals. While the actions of one person can affect the life of another, it is through our shared commitment and efforts that we impact the lives of students. **The Paul Strong Macomb Scholarship** is integral to that mission, making a difference by opening the door to education and opportunity.

The following student(s) received the **Paul Strong Macomb Scholarship** for the 2025 calendar year. The amount(s) below represent scholarships awarded from January 1, 2025 - December 31, 2025.

Kayla Boitnott	$ 250.00

Thank you for your dedication, not only to the college's mission, but to the entire community we serve. Our shared commitment to education will give our students the tools they need to achieve their dreams.

If I can be of any assistance, please do not hesitate to contact me. Thank you again for your support.

Warm regards,

Diane Banks
Director, Macomb Community College Foundation

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

HOODIE W/Pockets

Black Only (at this time) – one imprint

Small – XL $27.00
2XL $33.00
3XL $34.00

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

LOGO COLOR SCHEMES:

Black background with gold/yellow artwork and lettering

Black background with blue lettering and gold/yellow artwork

Choose when placing order

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

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IMPRINT ON YOUR OWN CLOTHING ITEM: Logo + Imprint Charge

3 ¼" Logo - $8.00 **9" – 10" Logo – $12.00** **12" Logo - $15.00**

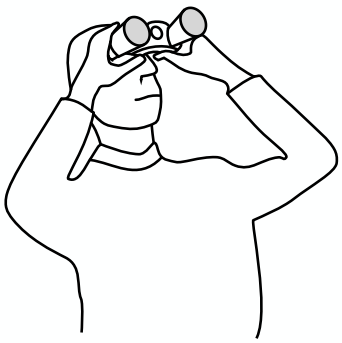
LOGO COLOR CHOICES

Gold/Blue

Gold-3D

Legacy

If you can see only one celestial event this April, see this one.



Enhance the scene – use binoculars!

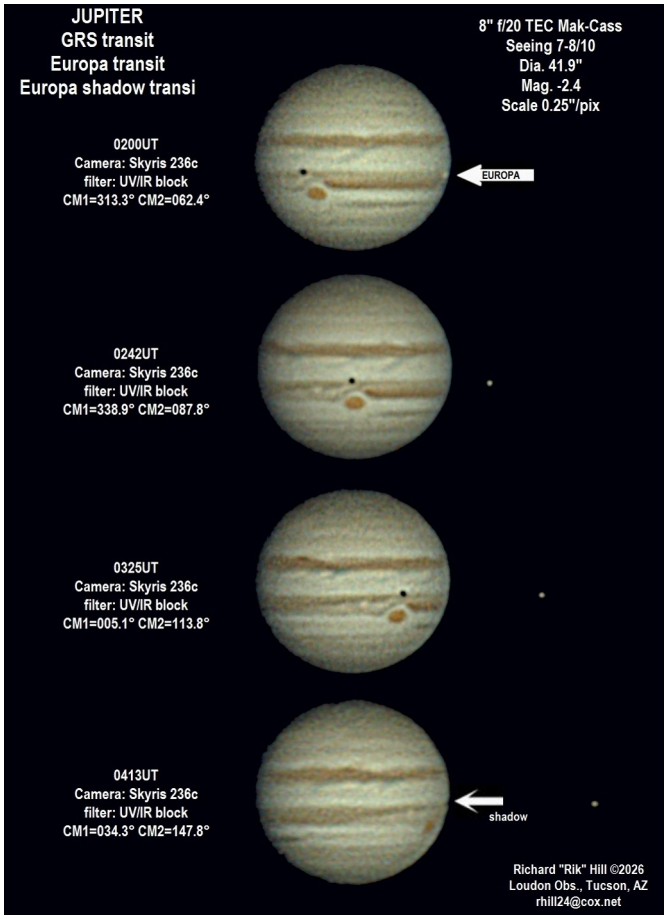
On April 18, 19, & 20, look low in the west-northwest 60 minutes after sunset.

- On the first evening, the crescent moon, glowing full with earthshine, floats near brilliant Venus, while on the second evening, it moves just above the delicate Pleiades star cluster, and to the right of the bright star Aldebaran and the intriguing Hyades star cluster.
- On the third evening, the slightly thicker, but more pronounced crescent moon hangs above the Pleiades and the Hyades.
- Above it all, bright Jupiter plows through Gemini, shining near Castor and Pollux.

WAS Astrophotos

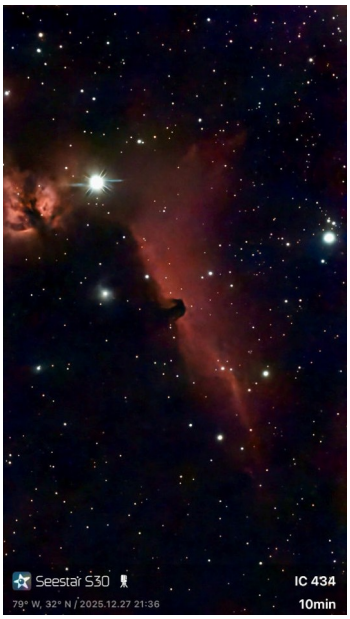
Fun with Jupiter

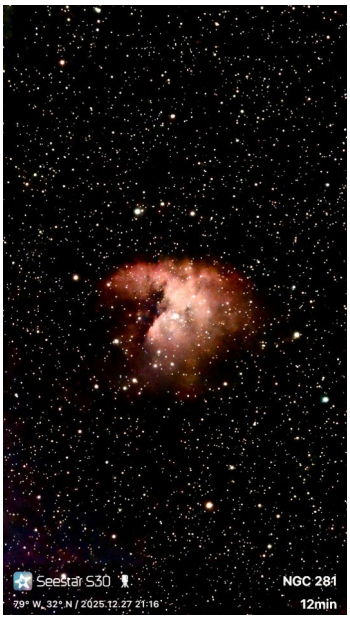
Rik Hill sent in this fine sequence from a Jupiter session. Rik says, “A nice GRS and Europa transit complete with Europa shadow transit.”



And more fun with Seestar

Back in September, ‘21, Bernard Locricchio offered up a 12.5” Newtonian for sale. I don’t know if that was successful but, since moving out of state, he does seem to be enjoying a new Seestar and sent me these four images below. From left to right: IC 434, NGC 281, M 45, and, of course, our Moon.





A Long-Awaited Dream:
Acquiring a Unitron Model 166

James Ehlers

When I first entered the astronomy hobby, the pier mounted Unitron Model 166 was a breathtaking sight to behold. Those elegant back page advertisements captivated me, and I poured over them endlessly, harboring the long-term dream of one day owning one of these magnificent instruments. My copy of The Messier Album was co-authored by an astronomer who used this very model to sketch deep sky objects, which only deepened the romance. It was that emotional connection—more than logic or practicality—that fueled my desire to someday call one my own.

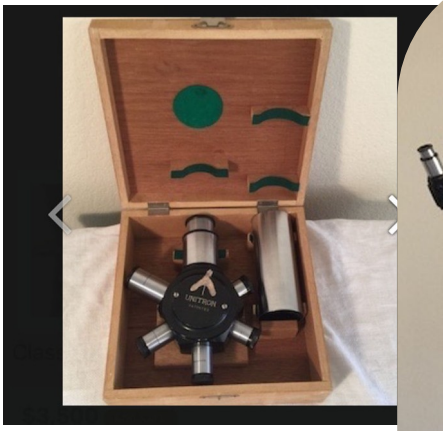
I first encountered an advertisement for a Model 166 on Cloudy Nights (posted May 20, 2024) last year. It appeared to be essentially complete, equipped with a Super Unihex and the standard weight drive. However, closer inspection of the photos suggested that the optical tube assembly (OTA), photographic guide scope, and finder had been repainted. The counterweight shaft also appeared incorrect—longer than original specifications.

A friend of mine, Mark Kuba, recognized the opportunity and quickly purchased the telescope, driving to Arizona to retrieve it. Unfortunately, inadequate packing and protection during transport resulted in vibration damage. I still remember the phone call when Mark told me what had happened, my heart sank with dread and disappointment. He moved the instrument into his garage with plans to repair it, but tragically, Mark passed away later that year.

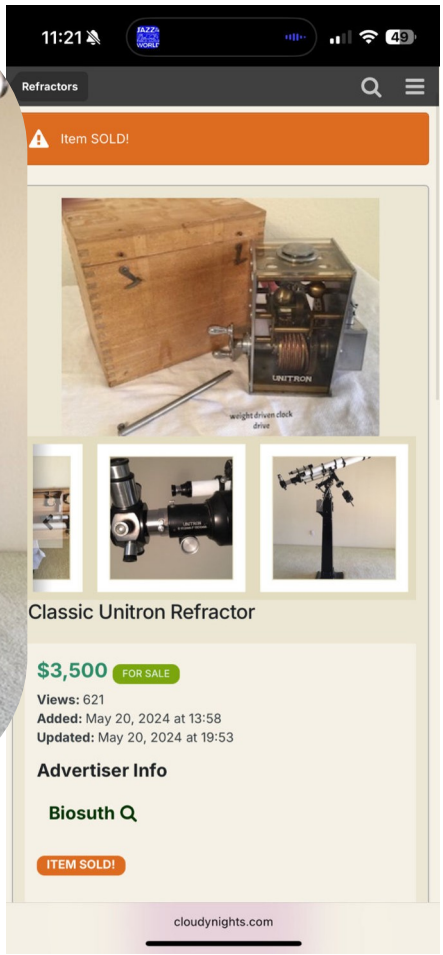
Another of Mark's friends, Darren Drake, subsequently acquired the astronomy equipment from the estate and graciously agreed to sell me the telescope.

By the time the Model 166 reached me, it was in fair condition. Damage occurred to the weight drive, the front objective assembly, and several other OTA attachments. Numerous fasteners were lost—some due to vibration during transport in the trailer, others between unloading and storage.

As part of the acquisition process, I began the careful task of identifying, sorting, and reassembling the various components needed to reconstruct a complete Model 166. Many parts had been intermixed with other telescope hardware, requiring a thorough inventory and detailed inspection to ensure that only original and appropriate components were used. Fortunately, my familiarity with Unitron models and the evolutionary changes throughout their production run made it relatively straightforward to identify the correct parts.



The Ad



Once the telescope was transported home, I began cleaning the components and determining what was still missing. Replacement fasteners were sourced online, and I chemically blued the brass slotted heads to achieve the correct black finish. I also obtained a stainless-steel threaded counterweight shaft of appropriate length. While functional, my long-term goal is to locate an original Unitron shaft—though these are exceedingly difficult to find without parting out another mount.

Today, the telescope is proudly displayed in my living room. Long term plans include having the OTA, photographic guide, and finder professionally re enameled in the standard Unitron white. The mount and weight drive will eventually receive a complete disassembly and cleaning, though that work can wait until other ongoing projects are completed.

Someday, I hope to build a roll off roof observatory to house multiple instruments, with the Model 166 occupying a place of prominence. After decades of admiration, setbacks, and perseverance, it feels especially fitting that this elegant instrument has finally found its way home.

All photos courtesy of James Ehlers

Picking up the Scope

Finally Home

WAYNE STATE UNIVERSITY

The Invisible Universe:
The Higgs Boson, Dark Matter and Gravitational Waves

April 9, 2026 - 3 p.m. - 5 p.m.

Undergraduate Library, David Adamany Bernath Auditorium
5155 Gullen Mall
Detroit, MI 48202

Join the Wayne State Department of Physics and Astronomy for an inspiring afternoon at the Vaden Miles Lecture Series, featuring internationally renowned physicist Marcela Carena of the Perimeter Institute for Theoretical Physics in Canada.

Most of the universe is invisible, but the invisibles determine our everyday existence. There is an invisible energy field, related to the Higgs boson, that provides mass. There is dark matter that holds our galaxy together, but we have yet to detect it in the laboratory. We have only recently learned how to detect gravity waves – ripples in spacetime – coming from the far corners of the cosmos, and possibly from dramatic events in the early universe.

The CERN Large Hadron Collider may produce signals of dark matter, new forces of nature or cousins of the Higgs boson. Discoveries from the LHC and from other experiments and observatories will be needed to pull together a coherent picture of the invisible world and explain the first instants of the Big Bang.

R.S.V.P.

Space Station 3D
AMC Forum 30

46 MIN

April 11, 2026, 11:00am

We thought the membership might be interested in this movie, and there's a Dunkin' Donuts/Baskin Robbins right nearby for gastronomy afterwards!

Tom Cruise is the host of this documentary where he narrates the history and creation of the ISS (International Space Station), one of the greatest works of the mankind. Astronauts of some countries (USA, Russia, Spain...) explain their training for going to the outer space, how they work in zero gravity and their special way to sleep, finding some fun by the way. In addition, Cruise narrates too the history of the astronautic and the spacial voyage made along the years, while the astronauts in the ISS discover and live an unique experience.

Tickets

WAS Merchandise

Available at Cranbrook and Macomb meetings

WAS Logo Stickers

$1.00 ea.
$5.00 for 7

WAS Pins

$2.50
Each

WAS Bandana

$5.00
Each

Astronomical Bandanas, featuring 33 Glow in the dark constellations and a WAS logo.

Endorsed by the Unicycle Cowboy!

Outreach Opportunity

Become an expert astronomer during *Astronomy Night at the Belle Isle Nature Center*!

Explore the wonders of the night sky on beautiful Belle Isle with fun, family-friendly activities about science, nature and astronomy. Stargaze using a telescope, try hands-on science activities and learn about the importance of dark skies for wildlife. The Belle Isle Nature Center will host this free event for all ages in partnership with the Wayne State University Planetarium, Michigan Science Center, Michigan State University Science Festival and Michigan Department of Natural Resources' Outdoor Adventure Center.

In the event of inclement weather, this event will be moved to 7-10 p.m. May 2.

What to Expect:

- Educational chats
- A view of the stars through the Michigan Science Center's Discovery Dome
- Star gazing through Wayne State University telescopes
- Access to the Belle Isle Nature Centers
- And much more!

Presentations

Cranbrook
7:00 pm, April 6, 2026

Main Talk

Bringing Space-Based Research Into the Classroom

By Thomas Drummond

This presentation will focus on three aspects of Orion's Quest (OQ), a 501c3 non-profit organization. An overview of the history, mission and vision of OQ, a brief look at the connection between, OQ, NASA, and the scientific community, and a detailed look at some of the research being conducted in microgravity and how students are involved.

About the Speaker

Thomas Drummond joined Orion's Quest following a 36-year career in public education in Michigan. Thomas holds a bachelor's degree in Geology and Astronomy and a master's degree in science education and School Administration from the University of Michigan. Thomas also received an Educational Specialist Degree in Science Education from Wayne State University. As a co-founder of Orion's Quest, he has served as the Chief Operations Officer for the past 21 years and has enjoyed collaborating with scientists, engineers, and astronauts to help create and implement authentic STEM opportunities for students in classrooms across the country and around the world.

Short Talk

Archaeoastronomy of the Newark, Ohio Earthwork

By Tom Cervenak

A short three-and-a-half-hour drive from the Detroit area is one of the world's great archaeological sites, the Newark, Ohio Earthworks. The Newark Earthworks is the major site of the larger Hopewell Ceremonial Earthworks, which was designated a UNESCO World Heritage Site two years ago. The talk will detail the Earthwork's 18.6 year Lunar alignment and its purpose.

About the Speaker

Tom Cervenak has been enjoying the hobby of astronomy since the early 1980s. He has a B.A. in Philosophy and received his Masters in Anthropology from Wayne State University. He worked 40 years in the Social Service field serving immigrants, youth, the elderly, and incarcerated individuals. He is now retired, is married and has two adult children. He is a two-year member of WAS and enjoys the great fellowship and its high level of professional interchange.

Macomb
7:00 pm, April 16, 2026

Feature

Auroras

By Janet Hart

Janet Hart will be discussing the interaction of the solar wind with Earth's magnetic field to create the aurora polaris, the reason we see different colors of aurora and viewing conditions in your area.

About the Speaker

Janet Hart is a professor at the University of Windsor in the departments of Physics and the School of the Environment, where she has taught a wide variety of classes such as Astronomy, Atmosphere and Climate and Planetary science classes for the past 10 years. She has a Masters degree in Earth Science and a Bachelors (Honors) degree in Environmental Geoscience both from the University of Windsor. She has been involved in public outreach for the School of the Environment.

Next Month

Cranbrook

Main Talk

The Stars of the Great Gyre

Short Talk

Upcoming Lunar Missions Great and Small

Macomb

Exoplanets

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 Jonathan Kade at: firstvp@warrenastro.org.

Skyward

David H. Levy

Of Mario Motta, Jean Mueller, the late Russell Porter, a Lunar Eclipse, and Me.

On the morning of 3 March, 2026, a total eclipse of the Moon darkened the night sky over all of the world that was in night. The eclipse was fabulous. During its total phase, the Moon was not really its usual coppery red color but more of a grayish-brown. On the Danjon luminosity scale, I gave it about a 1.5 on the scale of 0 to 5. I was lucky to view this eclipse during the inaugural session at the San Diego Astronomical Association's newest acquisition. I do not recall an eclipse that was more fun than this one. And I have viewed 104 eclipses ranging from penumbral lunar to total solar.

On 1 March of this year, Dr. Mario Motta, a nationally known cardiologist and an expert on the history of Stellafane and light pollution, and I, traveled to San Diego, in order to view the total lunar eclipse and to meet Jean Mueller. We wanted to see it from the American west coast, where we could view the entire predawn affair with the Moon well above the horizon. We were viewing it with Jean, world renowned as an observer at Palomar Mountain Observatory. She has discovered 15 comets, 13 asteroids, and 107 supernovae in far-off galaxies. The combined accomplishments of these two viewers of the night sky are truly spectacular. But what was even better were her stories about life at Palomar, her work there at the Samuel Oschin 48-inch on the Second Palomar Observatory Sky Survey, and later at the 200-inch. She spoke to a group that was unequivocally spellbound. Jean was delightful. Mario built and uses a wonderful 32-inch f/6 telescope which peeks far into the Universe from the sky above the eastern United States.

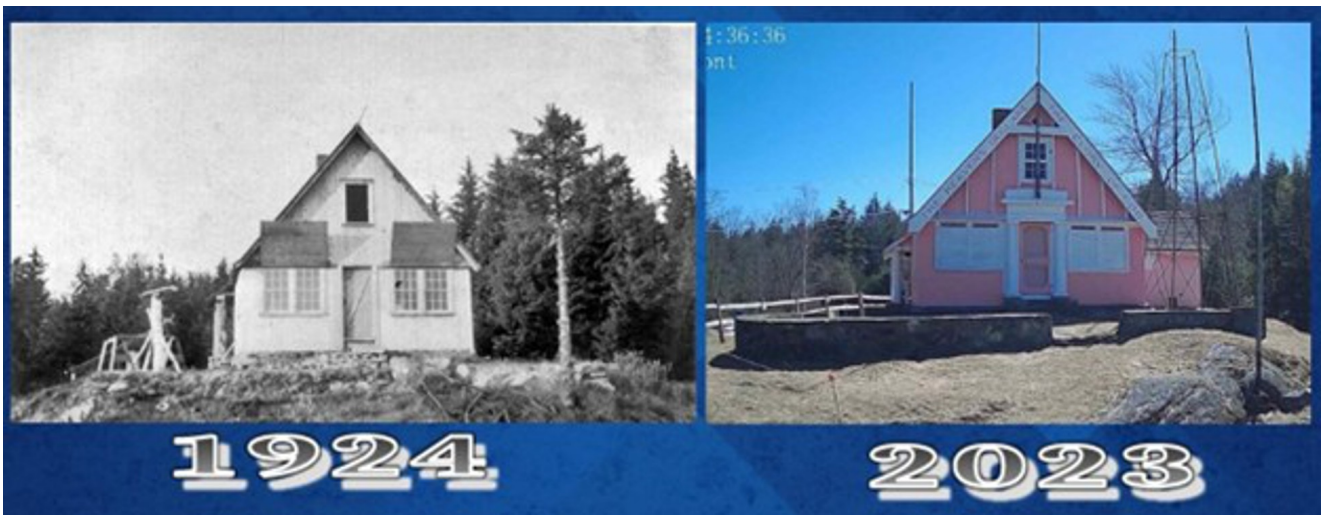
Mario is an accomplished deep-sky observer, and has spent a lifetime learning about and living the history of his beloved Stellafane. In fact, during the drive westward we were also driving back in time and there was Russell Porter, sitting in the back seat, sharing tales and laughing with us.

As we waited for the first penumbral tinge of Earth shadow to touch the Moon, Mario admitted that he "hates" the Moon because it prevents him from more enjoyment of his cherished remote galaxies, clusters, and other deep sky objects. He and I enjoyed a verbal joust about the Moon right during the eclipse! I love the Moon, but he appeared to be winning until I offered a comeback. It was from Leslie Peltier's Starlight Nights, where Leslie introduced me to a nursery rhyme. We ended up turning this into a standing joke to which we laughed all the way back to my Arizona home.

> "Lady Moon, Lady Moon, where are you roving?"
> "Over the sea, over the sea."
> "Lady Moon, Lady Moon, whom are you loving?"
> "All that love me, all that love me."

As joyous as the total eclipse was, our visit to Palomar the afternoon before the eclipse was truly magical. Again, Russell Porter was right with us. There, Jean recalled her many years there, first as an observer for the Second Palomar Observatory Sky Survey, then operating the mighty 200-inch telescope.

While there I finally got to complete a dream. In my 77 years I have delivered more than 3150 lectures. I like to imagine that the very first lecture was at the opening of the great



This picture shows the Russell Porter-designed pink clubhouse with its inscription.

telescope. Mueller, as versed in the history of Palomar as Motta is with Stellafane, told us that the telescope was dedicated on 3 June 1948. Was my first lecture (Lecture zero) delivered that day? I was twelve days old. On this day, 77 years later, I finally turned that into a reality. I gave a brief lecture near the wonderful 200-inch mirror, and another lecture at the visitor center near the 18-inch Schmidt camera which I used with Gene and Carolyn Shoemaker for seven wondrous years.

Enter Russell Porter, who seemed to accompany us throughout this visit. We got to have a really special visit with the person who designed the telescope and whose sketches are among the finest in the world. Even though Russell Porter died before Mario was born, and when I was but a year old, it felt as though he had been recalled to life for us. Had he been alive I would have asked him, "In Berton Willard's biography of your life, he explained how you accepted Hale's offer of a position designing the 200-inch telescope. How many seconds did it take you to accept this life-changing proposition?"

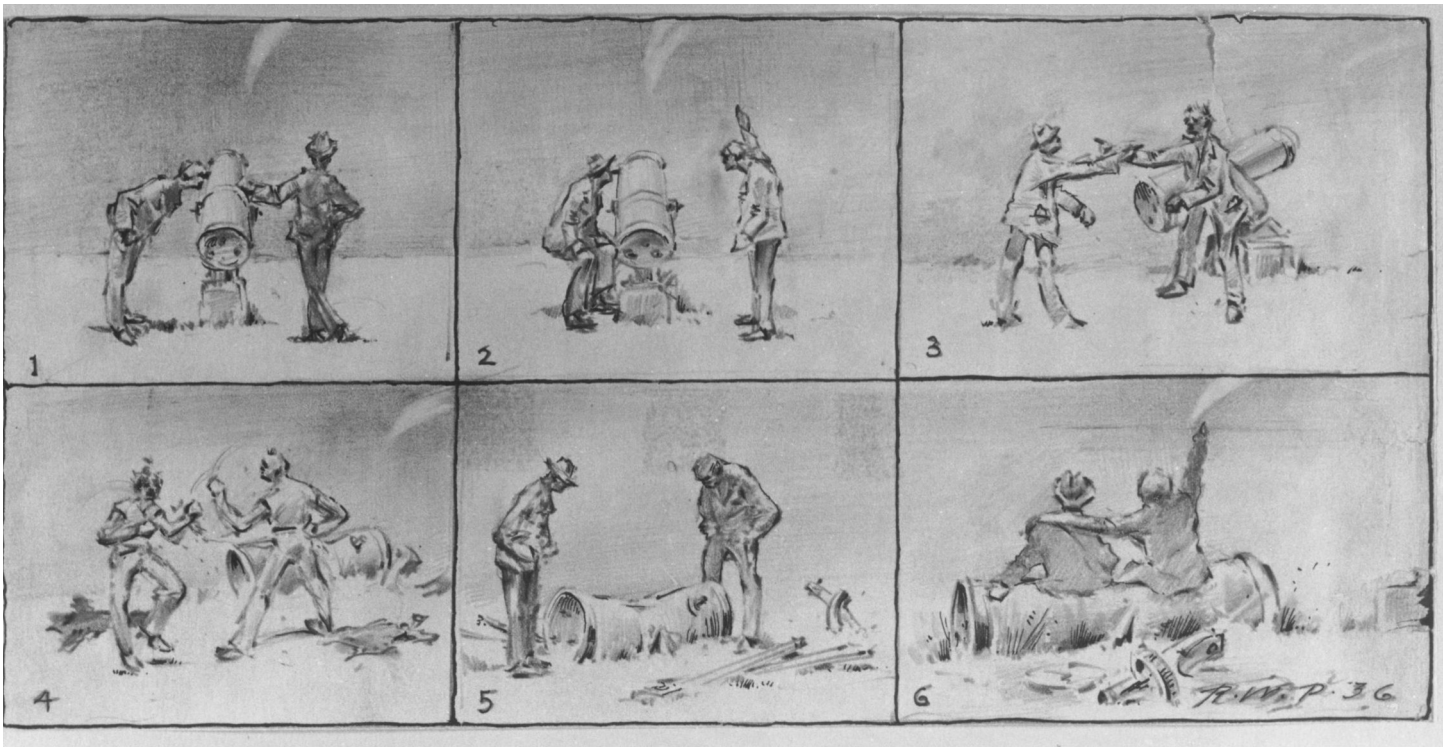
"Less than 3.14159 seconds," Porter might have replied with his trademark wide grin.

Porter's original sketched design needed revision. I envisage the meeting where that design was turned down, and what the other committee members said about it. "We reject this design, but we love your sketches; they are splendid, magnificent!" Porter's later design was accepted. In a stroke of genius, he took his now-famous design of a small garden telescope with its split-ring mounting, and upgraded it to the horseshoe mount we know and love.

What might have surprised the Palomar engineers in Porter=s time was the elegance of the 200-inch design. It was and still is simplicity itself. The split-ring of its design descends directly from the split-ring he used in his wonderful garden telescope; I love to think of the mighty 200-inch as being the largest Porter garden telescope ever built. Finally, in the hallway surrounding the telescope are mounted many of Porter's sketches, among the finest artistry I have ever seen. But according to Jean, Russell Porter did much more than design the Hale telescope. He also chose the locations of the buildings that dot the Palomar mountaintop, from observatories to the offices and the houses. This mountain belongs to Russell Porter.

The only negative aspect of Porter's move to Palomar was the possible loss of his close friends at Stellafane, the amateur telescope makers event he founded in 1925. But according to Mario, Porter managed to return to his cherished Stellafane every summer. In my lifetime, I have been privileged to visit Stellafane many times, and once a month for seven years, I considered Palomar my second home. On this visit, the place displayed its rich times past like a brilliant full Moon, after the eclipse, lighting up the sky. The precious words he inscribed on the front gables of Stellafane's pink clubhouse inspire us to this day and this night: From the first line of Psalm 19:

"The heavens declare the glory of God."



A Porter series of sketches about a fight over a comet. Notice the shape of the telescope in the fifth sketch.

Pictures used with the kind permission of Dr. Mario Motta.

Coordinate Systems in Celestial Mechanics

By Brad Young, Astronomy Club of Tulsa

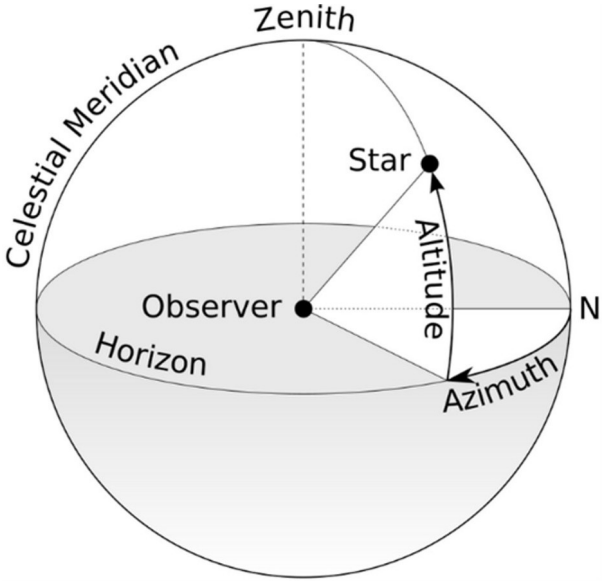
New technologies in optics, imaging and guiding systems have significantly shortened the learning curve for amateur astronomers. When I first began as an amateur, we did not have go to telescopes but instead had to use physical setting circles to determine where an object was in the sky. This meant not only knowing its coordinates but also the sidereal time. Although finding yours is not that difficult to do, the new technology now does all the work for you in finding objects and some of the knowledge you needed in the past is no longer required. This is wonderful in that it saves you steps and lets you spend more time with the eyepiece or imaging, but it also means that fundamental ideas about how the sky works are not picked up as part of the normal growth of an amateur. There are many things we don't get exposed to early on that may help down the road, and it is important to help fill in those gaps if we see them among new members.

In this article, I'd like to discuss fundamental celestial mechanics. Celestial mechanics is a math-based study of how the sky and all the astronomical objects in it move. There are four coordinate systems that are often used in astronomy. Each one of these coordinate systems are useful in their own way. Understanding how your equipment finds and tracks objects is a way of helping you learn where objects are in the sky, and how we determine their position whether done manually or through computer systems. And, if your technology isn't working quite right, this knowledge may help you troubleshoot.

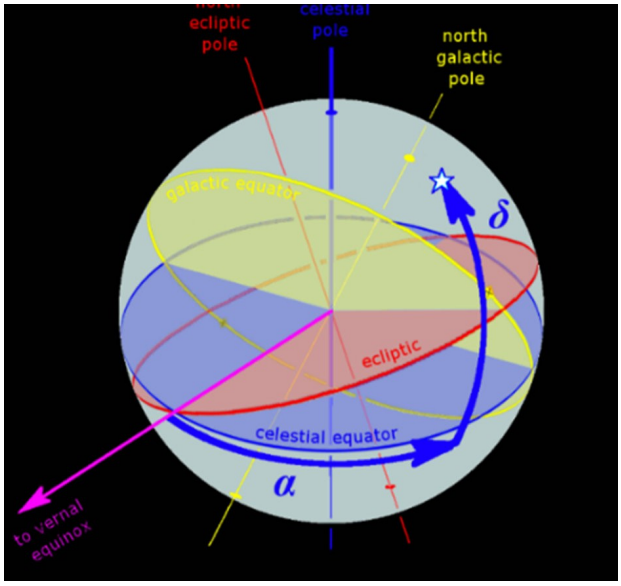
There are two types of mounts for most amateur telescopes. The first is what's known as a horizontal or alt azimuth mount, which is one that moves up and down and rotates around the base, but is parallel with respect to the ground. The other type is an equatorial amount which is inclined to the ground by an angle determined by your latitude on Earth. For instance, our latitude here in Tulsa is 36 degrees north so the equatorial mount would have the telescope tube fixed at a 36˚ angle up from the horizon. It's important to note that your telescope, through either manual or automatic controls, will determine the location of the object you want to observe based on the type of mount it uses.

The first coordinate system is the simplest horizontal or alt azimuth. As described above regarding the mount that uses it for coordinates, it is a simple up and down (altitude) and a circle coplanar with the ground (parallel to it, azimuth) . This type of coordinate system is simple and the most intuitive. Altitude is measured in degrees from zero to 90 at the zenith and azimuth from zero to 360 running clockwise from North. The symbol for altitude is theta [θ] and that for azimuth is phi [ϕ]. One way to look at this system is that the point you look at never moves, but the objects in the sky do. This was how ancient peoples saw the universe; it appeared that the Sun, for instance, rotated around the Earth.

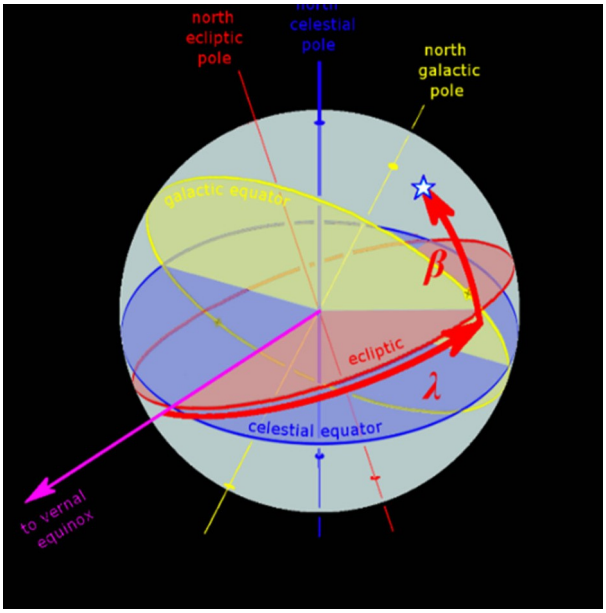
The next coordinate system is closely tied to navigation and uses some of the same principles as the horizontal system. However, the equatorial coordinate system sets zero degrees in latitude as the great circle projection of earth's equator onto the sky. The corollary of latitude is declination [δ] in this coordinate system, in degrees. The projection of longitude can be measured in degrees, using the symbol [α]. Longitude is also called right ascension and is measured in hours, minutes and seconds. This is explained by its navigational roots; each hour of Right Ascension is 15˚ and represents the rotation of the earth in that period at any point on its surface. This is also why the equatorial coordinate system is often referred to as "RA Dec".



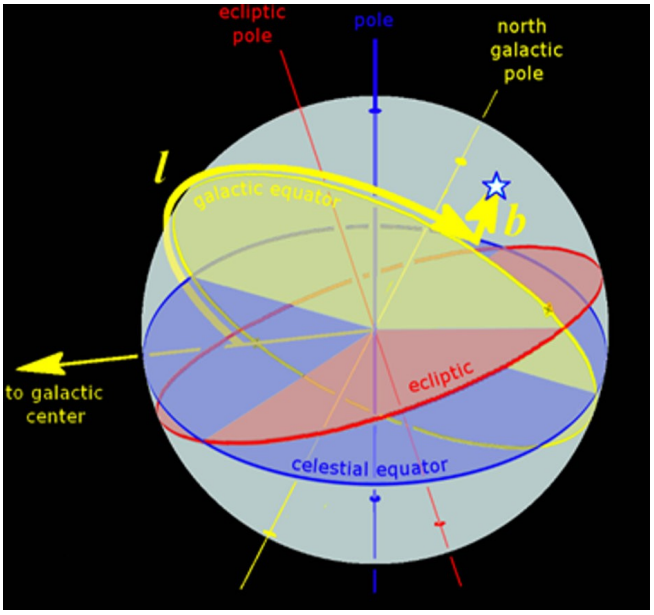
Horizontal Coordinate System
Star is at this position for only a moment.



Equatorial Coordinate System
Star is always at this RA Dec but that point rises and sets.



Ecliptic Coordinate System



Galactic Coordinates

This coordinate system is essentially the map of the sky projected onto the coordinate system we used on Earth. So, for instance, the bright star Sirius is always located at Right Ascension 6 hours and 45 minutes and declination -16˚.7. This coordinate system has the advantage of every object in the sky except for those within our solar system being at the same RA and Dec for decades. It is like the situation of a city on a map. Tulsa is located at 36˚ north and 96˚ west longitude and this will not change substantially in the foreseeable future. The only difficulty here is that you must know a reference Right Ascension point to know what portion of the sky is projected onto the coordinate system. Astronomy uses the point in the sky known as the First Point of Aries, located at zero hours and zero degrees declination, which is a point now located in the constellation Pisces. If you'd like to know why that point moves over the last few thousand years look up “precession of the equinoxes”.

Now, instead of watching the stars change in the sky in reference to a point, we see it is the point in the sky that rises and sets because of the Earth’s rotation. This makes it easier to record where objects are and find them again. Using Sirius as example again, we learned that stars culminate (reach their highest point in either due south or north) 4 minutes earlier each night. This is the result of our revolution around the sun in about 365 days, very close to 360 degrees around a circle. 1 degree is 24 hrs a day x 60 min per hr / 360 degrees = 4 minutes. So, if Sirius culminated at 12 a.m. last night, it will tonight at 11:56 p.m., at the same spot in the sky.

The other two coordinate systems build off the same idea, but instead of using a projection of terrestrial latitude and longitude they build their system off ecliptic or galactic coordinates. The ecliptic system sets longitude 0 at the First Point of Aries again but instead of using the equator of the earth projected into the sky, it uses the path followed by the Sun (known as the ecliptic) as zero latitude [β] with longitude [λ] again measured to the east. Sirius is located at λ = 104˚ and β = -39˚.6 Similarly, galactic coordinates use a point identified by l and b, starting at the center of the Milky Way.

Each type of coordinate system has its best use. Horizontal is a simple way to identify location in the sky based on cardinal directions. The equatorial system uses a star map which is projected onto the sky. Telescopes that use an alt azimuth mount find the altitude and azimuth of the object of interest from its Right Ascension and Declination and convert one to the other. Equatorial mounts determine the declination and Right Ascension from the current time and after alignment typically with two stars to determine the current projection of terrestrial coordinates on the sky. The other two coordinate systems are useful in studying the movement of planets and the location of objects within our galaxy but are less useful to amateur astronomers.

It is possible to transform from one set of coordinates to one of the others, if each are in the same epoch, although this can also be fixed, using a separate step. Those calculations are found in Meeus, below.

BIBLIOGRAPHY:

Astronomical Formulae for Calculators, Jean Meeus, 1982.

Astronomy Made Simple, Meir Degani, 1956.

The Stars in Their Courses, Sir James Jeans, 1931.

The Milky Way: An Autobiography of Our Galaxy, Moiya McTier, 2022.

Astrophysical Concepts, Martin Harwit, 1988.

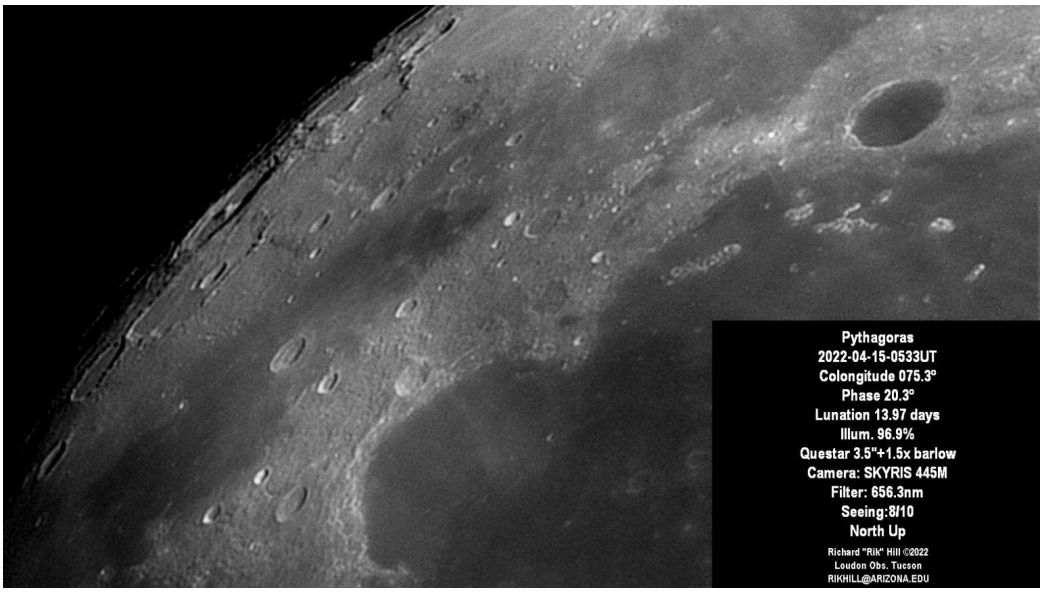
Diagrams by Tfr000 (talk) 16:32, 25 June 2012 (UTC) - Own work, CC BY-SA 3.0,https://commons.wikimedia.org/w/index.php?curid=20028939

Over the Moon

With Rik Hill

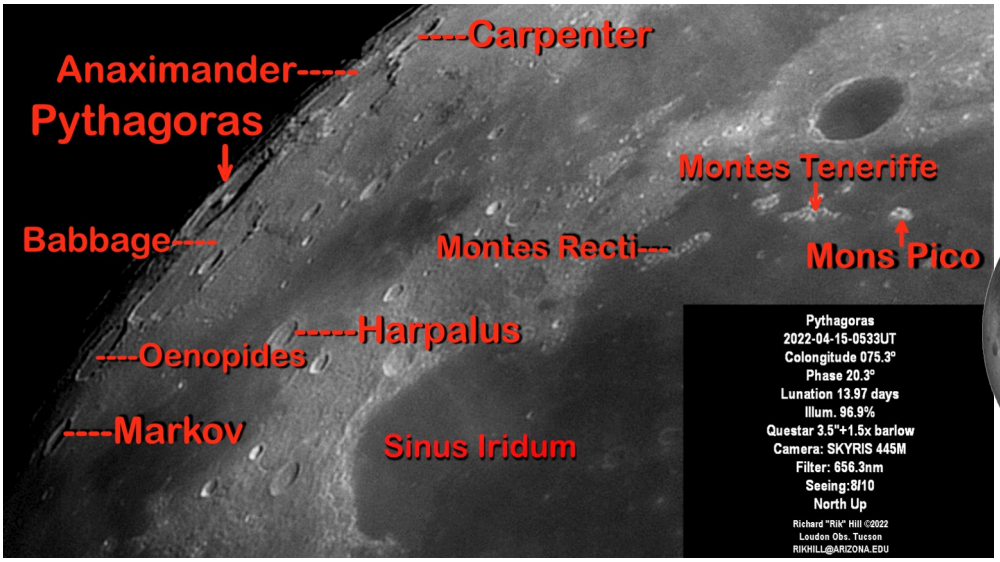
Pythagoras

This is a lot more than Pythagoras but our eyes are instantly drawn to that handsome 133km diameter crater seen here on the edge of the terminator. I always like watching the shadow of the central peak as it shrinks on the crater floor with the rising Sun. Because of it's position near the limb, we can only see one interior wall (western) and have never seen the eastern wall from the Earth. We have seen it from spacecraft and it's shows this crater to be as magnificent as Copernicus. The large area outlined by the low walls to the lower right of Pythagoras is the equally huge, the ancient Babbage (148km dia.) maybe as old as 4.5 billion years! It was covered over by a lot of the ejecta from the Pythagoras impact. Below Babbage is the well defined Oenopides (70km) and farther Markov (43km).

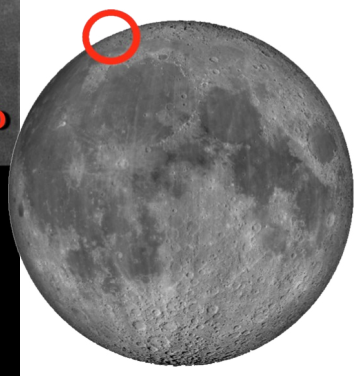


Above right of Pythagoras is a large irregular area that is Anaxamander 70km diameter for the foreground portion. It is an overlap of about 3 large craters all the rest of which have satellite names (Anaxamander B, Anaxamander X etc.). Farther up is the crater Carpenter (61km) near the upper edge of this image.

Two large commanding features in this image are Sinus Iridum (411km) the large cirque at the bottom of this image. Between this bay or sinus and Pythagoras is the crater Harpalus (41km) sitting in the middle of the west end of Mare Frigoris, which displays a nice radial ray pattern during full moon. The distinctive dark oval in the upper right of the image that is Plato (104km). You might notice a couple of small white dots on the floor of Plato that are several of the small craterlets that are the goal to so many lunar imagers. LROC QuickMap shows the larger craterlets to be 2-3 km in diameter, about the limit for this telescope. Below Plato are the nice island mountains, Montes Teneriffe on the right with Mons Pico the roughly triangular island on the far right end, and the larger elongated mass on the far left that are Montes Recti. The changes in appearance of these mountains are enjoyable to observe during the course of a lunar day.



This is a montage of 3 images each made from 1800 frame AVIs stacked with AVIStack2 (IDL) knit together with Microsoft ICE and then finish processed with GIMP and IrfanView.



Location Maps by Ralph DeCew

History S.I.G.

April 1996

In Computer Chatter by Larry Kalinowski, we get a ton of tips for viewing Comet Hyakutake before he gets down to the business of computer news. He also wrote the article, Algol Project Begins, part of a variable Star Project. The Algol Project aims at practicing comparisons of magnitude with neighboring stars- an important part of variable measurements. A report on the Chili Cook Off was provided by Brian Benning. Then Larry Kalinowski tells us that our own Ken Wilson has co-authored a book, Making and Enjoying Telescopes, with Robert Miller in Club Member Turns Author. Minutes of the February 15, 1996 Macomb meeting were provided by Blaine McCullough. Finally, we have Masterpieces Messier Missed by Jeff Bondono: NGC 3628 at 11h20m +13d35m.

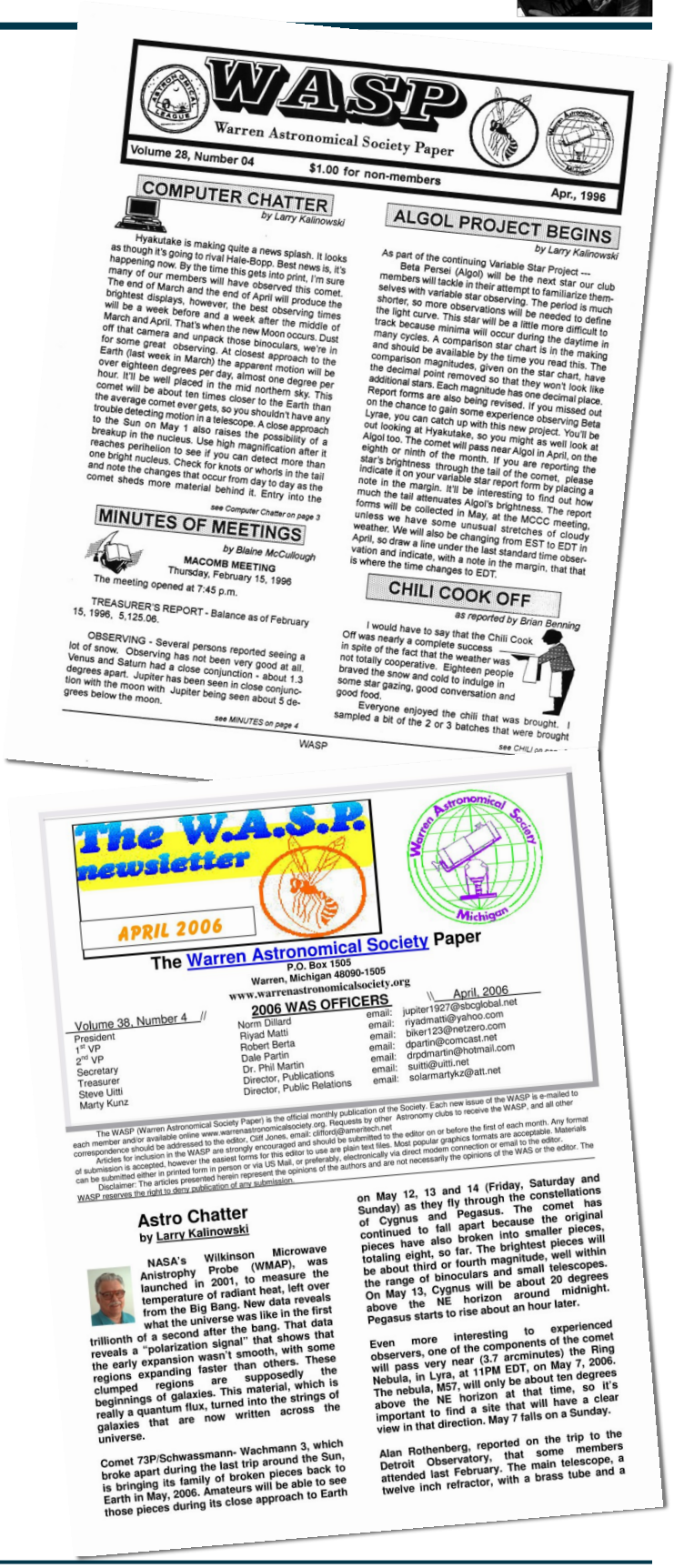
April 2006

Astro Chatter By Larry Kalinowski covers everything from astronomy to club activities and random news snippets in between.

The Swapshop takes up over half a page, Larry's trying to move a lot of equipment there. We get an Eclipse report in Late Notices (Editor's note: The following was received from our 2nd VP, Bob Berta, relaying a report by Bob Naeye from Libya on the eclipse March 29th). The issue finishes off with NASA Space Place: Planets in Strange Places By Trudy E Bell

From the Scanning Room

When I'm making my selections (OK, not much decision making going on, just go back to 1990s and 2000s and take two matching months.) Next month went missing, whether not published or lost. Digging though, I found that the editorship passed from Toni Bondono to Jeff Bondono with the announcement made in the June issue. While the issues up until April in the 1996 range have a printed version, there is no May issue that I can find. The issues from June though December, are online only as HTML pages.



WASP

Warren Astronomical Society Paper

Volume 28, Number 04 — $1.00 for non-members — Apr., 1996

COMPUTER CHATTER

by Larry Kalinowski

Hyakutake is making quite a news splash. It looks as though it's going to rival Hale-Bopp. Best news is, it's happening now. By the time this gets into print, I'm sure many of our members will have observed this comet. The end of March and the end of April will produce the brightest displays, however, the best observing times will be a week before and a week after the middle of March and April. That's when the new Moon occurs. Dust off that camera and unpack those binoculars, we're in for some great observing. At closest approach to the Earth (last week in March) the apparent motion will be over eighteen degrees per day, almost one degree per hour. It'll be well placed in the mid northern sky. This comet will be about ten times closer to the Earth than the average comet ever gets, so you shouldn't have any trouble detecting motion in a telescope. A close approach to the Sun on May 1 also raises the possibility of a breakup in the nucleus. Use high magnification after it reaches perihelion to see if you can detect more than one bright nucleus. Check for knots or whorls in the tail and note the changes that occur from day to day as the comet sheds more material behind it. Entry into the

see Computer Chatter on page 3

MINUTES OF MEETINGS

by Blaine McCullough

MACOMB MEETING

Thursday, February 15, 1996

The meeting opened at 7:45 p.m.

TREASURER'S REPORT - Balance as of February 15, 1996, 5,125.06.

OBSERVING - Several persons reported seeing a lot of snow. Observing has not been very good at all. Venus and Saturn had a close conjunction - about 1.3 degrees apart. Jupiter has been seen in close conjunction with the moon with Jupiter being seen about 5 degrees below the moon.

see MINUTES on page 4

ALGOL PROJECT BEGINS

by Larry Kalinowski

As part of the continuing Variable Star Project --- Beta Persei (Algol) will be the next star our club members will tackle in their attempt to familiarize themselves with variable star observing. The period is much shorter, so more observations will be needed to define the light curve. This star will be a little more difficult to track because minima will occur during the daytime in many cycles. A comparison star chart is in the making and should be available by the time you read this. The comparison magnitudes, given on the star chart, have the decimal point removed so that they won't look like additional stars. Each magnitude has one decimal place. Report forms are also being revised. If you missed out on the chance to gain some experience observing Beta Lyrae, you can catch up with this new project. You'll be out looking at Hyakutake, so you might as well look at Algol too. The comet will pass near Algol in April, on the eighth or ninth of the month. If you are reporting the star's brightness through the tail of the comet, please indicate it on your variable star report form by placing a note in the margin. It'll be interesting to find out how much the tail attenuates Algol's brightness. The report forms will be collected in May, at the MCCC meeting, unless we have some unusual stretches of cloudy weather. We will also be changing from EST to EDT in April, so draw a line under the last standard time observation and indicate, with a note in the margin, that that is where the time changes to EDT.

CHILI COOK OFF

as reported by Brian Benning

I would have to say that the Chili Cook Off was nearly a complete success in spite of the fact that the weather was not totally cooperative. Eighteen people braved the snow and cold to indulge in some star gazing, good conversation and good food.

Everyone enjoyed the chili that was brought. I sampled a bit of the 2 or 3 batches that were brought

see CHILI on page

The W.A.S.P. newsletter

APRIL 2006

Warren Astronomical Society Michigan

The Warren Astronomical Society Paper

P.O. Box 1505

Warren, Michigan 48090-1505

www.warrenastronomicalsociety.org

Volume 38, Number 4 // April, 2006

2006 WAS OFFICERS

President	Norm Dillard	email: jupiter1927@sbcglobal.net
1st VP	Riyad Matti	email: riyadmatti@yahoo.com
2nd VP	Robert Berta	email: biker123@netzero.com
Secretary	Dale Partin	email: dpartin@comcast.net
Treasurer	Dr. Phil Martin	email: drpdmartin@hotmail.com
Steve Uitti	Director, Publications	email: suitti@uitti.net
Marty Kunz	Director, Public Relations	email: solarmartykz@att.net

The WASP (Warren Astronomical Society Paper) is the official monthly publication of the Society. Each new issue of the WASP is e-mailed to each member and/or available online www.warrenastronomicalsociety.org. 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

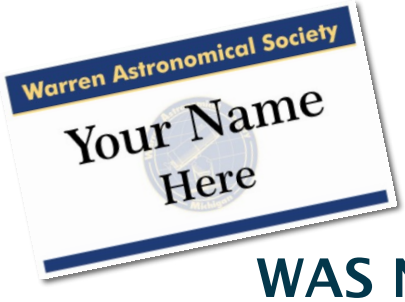
by Larry Kalinowski

NASA's Wilkinson Microwave Anistrophy Probe (WMAP), was launched in 2001, to measure the temperature of radiant heat, left over from the Big Bang. New data reveals what the universe was like in the first trillionth of a second after the bang. That data reveals a "polarization signal" that shows that the early expansion wasn't smooth, with some regions expanding faster than others. These clumped regions are supposedly the beginnings of galaxies. This material, which is really a quantum flux, turned into the strings of galaxies that are now written across the universe.

Comet 73P/Schwassmann- Wachmann 3, which broke apart during the last trip around the Sun, is bringing its family of broken pieces back to Earth in May, 2006. Amateurs will be able to see those pieces during its close approach to Earth on May 12, 13 and 14 (Friday, Saturday and Sunday) as they fly through the constellations of Cygnus and Pegasus. The comet has continued to fall apart because the original pieces have also broken into smaller pieces, totaling eight, so far. The brightest pieces will be about third or fourth magnitude, well within the range of binoculars and small telescopes. On May 13, Cygnus will be about 20 degrees above the NE horizon around midnight. Pegasus starts to rise about an hour later.

Even more interesting to experienced observers, one of the components of the comet will pass very near (3.7 arcminutes) the Ring Nebula, in Lyra, at 11PM EDT, on May 7, 2006. The nebula, M57, will only be about ten degrees above the NE horizon at that time, so it's important to find a site that will have a clear view in that direction. May 7 falls on a Sunday.

Alan Rothenberg, reported on the trip to the Detroit Observatory, that some members attended last February. The main telescope, a twelve inch refractor, with a brass tube and a



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.

CRANBROOK INSTITUTE OF SCIENCE

Michigan's Museum of Natural History

APRIL 2026

Notable Sky Happenings

Apr. 1 - 7

The bright star above the Moon on the 2nd is Spica (ESE eve.). Moon is right of Antares on the 6th (SSW morn.).

Apr. 8 - 14

Yuri Gagarin became the first man to orbit Earth 65 years ago on the 12th. Christiaan Huygens was born on the 14th in 1629.

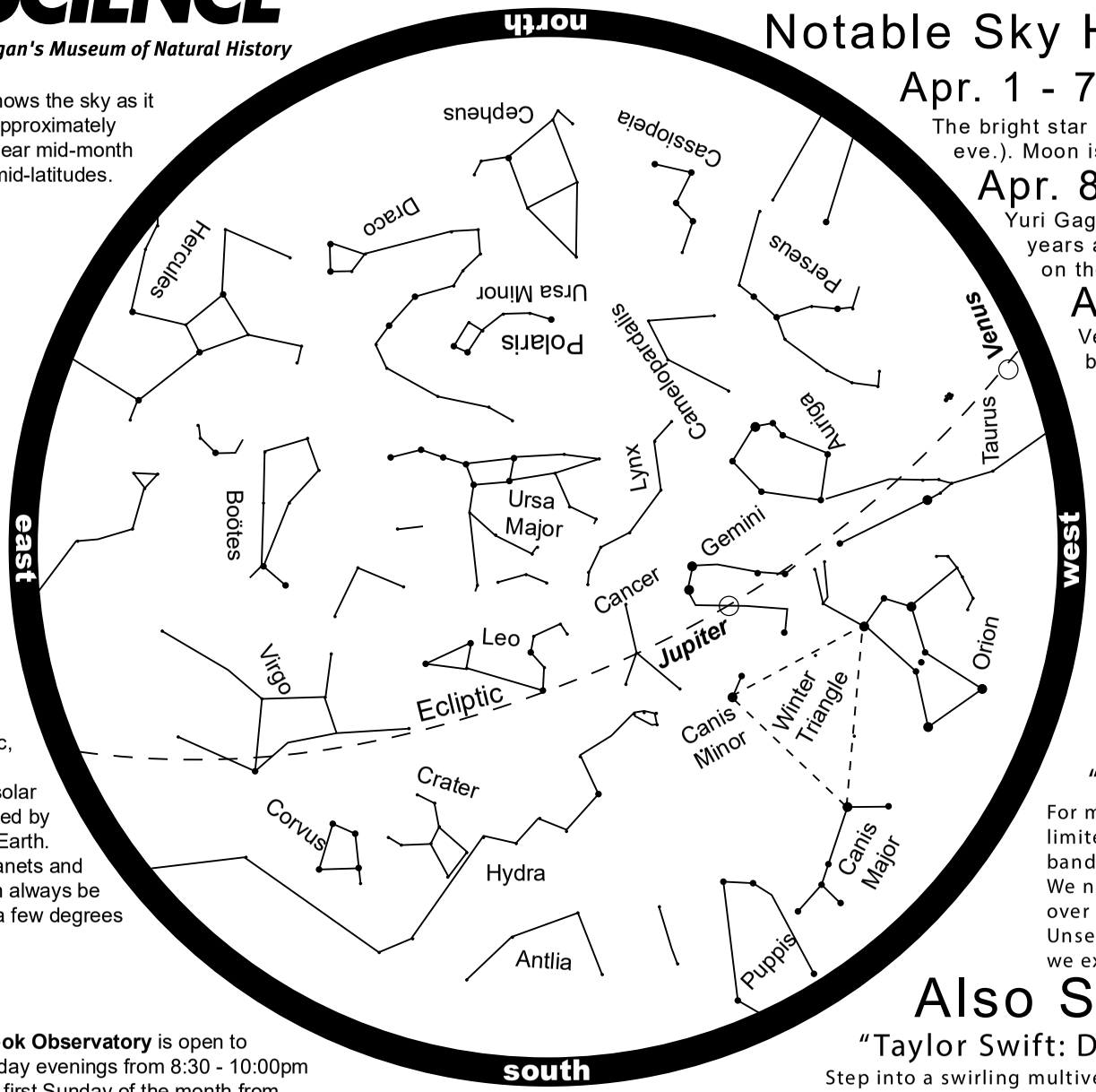
Apr. 15 - 21

Venus is to the left of the Moon on the 18th and below on the 19th (WNW evening).

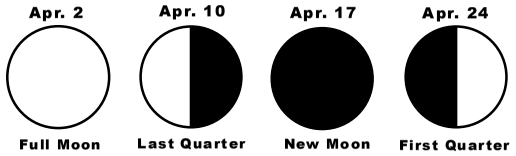
Apr. 22 - 30

The Moon is above Jupiter on the 22nd (W evening). The Lyrid meteor shower peaks on the evening of the 22nd-23rd. Occultation (covering) of Regulus by the Moon on the 25th. Star disappears at 8:28pm EDT and reappears at 9:11pm EDT (times are for Detroit).

This chart shows the sky as it appears at approximately 10pm EDT 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 always be found within a few degrees of this plane.



Now Showing

"Unseen Universe"

For millions of years our view of the heavens has been limited by our eyes; allowing us to only see a narrow band of electromagnetic radiation we call visible light. We now have the technology to capture the Universe over an amazing width of the spectrum and beyond. Unseen Universe provides a stunning visual treat as we explore the latest splendors of the heavens.

Also Showing

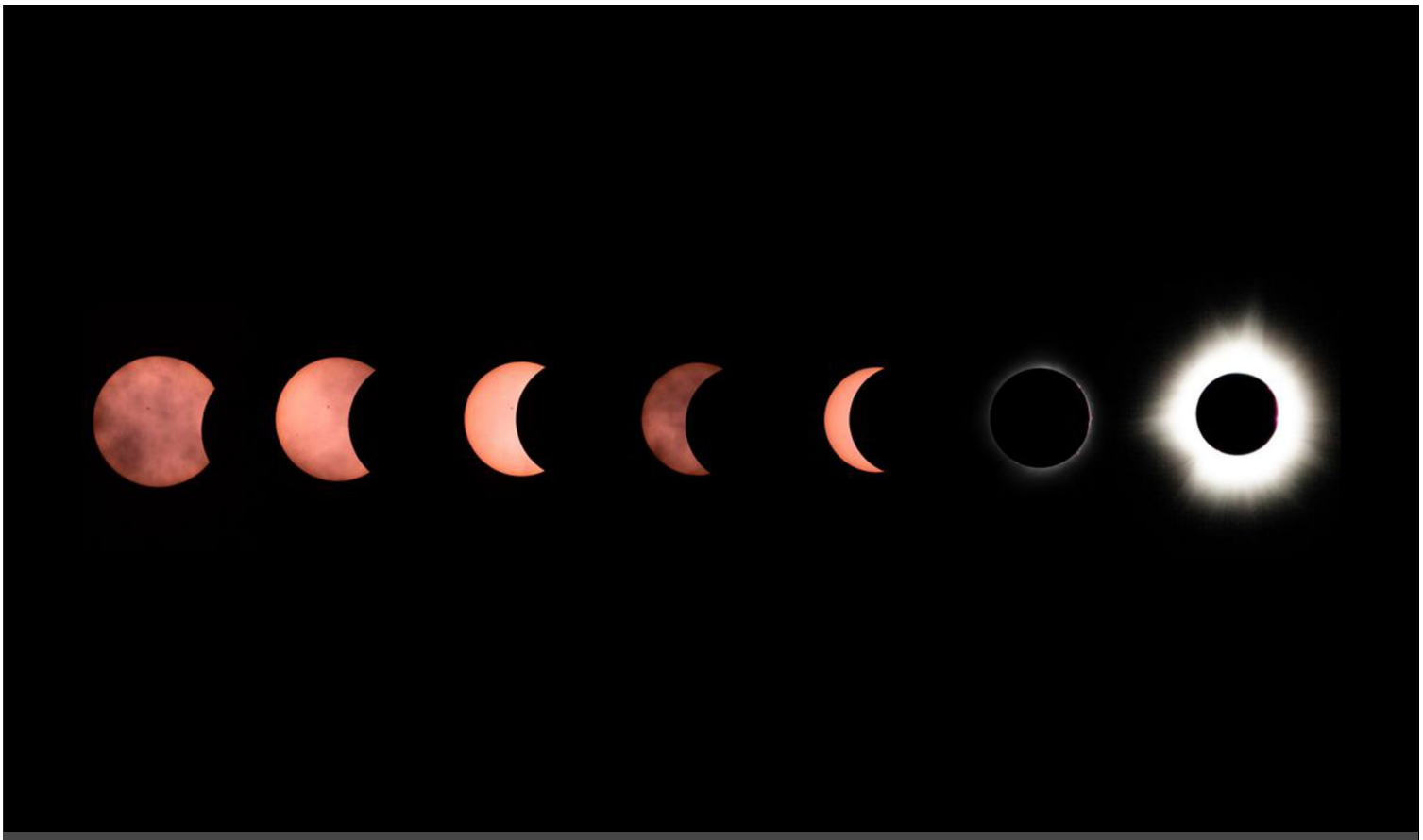
"Taylor Swift: Dimensions"

Step into a swirling multiverse where mathematics and music collide in Taylor Swift: Dimensions—a stunning planetarium experience of breath-taking 360° visuals. From the tender acoustics of "Cardigan" to the electric energy of "Ready For It?" and the fun vibes of "Cruel Summer."

The Cranbrook Observatory is open to the public Friday evenings from 8:30 - 10:00pm EDT, and the first Sunday of the month from 1:00 - 4:00pm for solar viewing.

For observatory information visit http://science.cranbrook.edu/explore/observatory

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



Solar Eclipse sequence — Vatshalya Dandibhotla

April

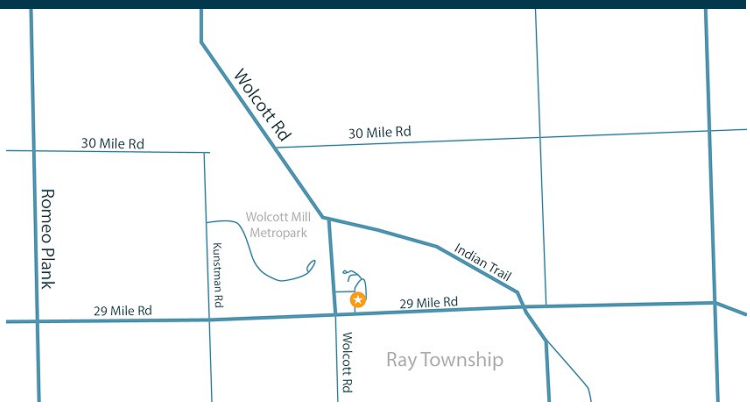
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 FULL MOON Sunset: Passover begins April Fool's Day	2	3 Mercury at Greatest Elong: 27.8°W Good Friday	4
5 Easter	6 Cranbrook	7 Moon at Apogee: 404974 km	8	9 LAST QUARTER MOON	10	11
12	13	14	15 Tax Day	16 Macomb	17 NEW MOON	18
19 Moon at Perigee: 361631 km	20	21	22 Lyrid Meteor Shower Earth Day	23 FIRST QUARTER MOON	24 Arbor Day	25 Stargate
26	27	28	29	30		

Stargate Observatory

Monthly Free Astronomy Open House and Star Party
8:00 PM, April 25th
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

March Open House

March 28, 2026

Jeff MacLeod filled in for Riyad Matti. He reported that Stargate opened at 7pm with a soon-to-be member showing the Sun in a Lunt solar scope. Tina Wong helped open the Observatory with me. Despite the skies never getting better than mostly cloudy we were able to observe a gibbous Moon, Jupiter, and double star Caster. Parker Huellmantel helped me close up the Observatory at 11pm. We had a small group of American Heritage Girls. Overall we had 7 members and about 25 guest on site over the evening.

May Open House

The next open house is scheduled to start at 8:00 pm on Saturday, May 23, 2026.

-Jeff MacLeod,
Outreach Chair

Treasury Report

For March 31, 2026

BOA Checking/cash box

Balance $21,224.22

Income

Memberships 201.00
Telescope sales 1350.00
Cashback rewards/adjust. 3.59

Expenses

BOA credit card 188.00

Credit Card

Expense

PO Box annual fee 188.00

Income

Payment from checking 188.00

Balance $0.00

PayPal

Balance $1135.74

Income

Memberships 44.59

Expenses

None 0.00

Astronomical Events For April 2026

Add one hour for Daylight Saving Time

Source:

http://astropixels.com/almanac/almanac21/almanac2026est.html

Day	Time (h:m)	Event
1	21:12	FULL MOON
2	20:32	Spica 1.8°N of Moon
3	18:00	Mercury at Greatest Elong: 27.8°W
6	14:21	Antares 0.6°N of Moon
7	3:32	Moon at Apogee: 404974 km
9	23:52	LAST QUARTER MOON
13	18:43	Moon at Ascending Node
15	19:45	Mars 3.7°S of Moon
17	6:52	NEW MOON
19	1:57	Moon at Perigee: 361631 km
19	3:49	Venus 4.8°S of Moon
19	11:28	Pleiades 1.0°S of Moon
19	14:00	Mars 1.2°N of Saturn
20	5:00	Mercury 0.5°S of Saturn
20	17:00	Mercury 1.7°S of Mars
22	14:00	Lyrid Meteor Shower
22	17:06	Jupiter 3.6°S of Moon
23	3:59	Pollux 3.2°N of Moon
23	21:32	FIRST QUARTER MOON
23	23:17	Venus 3.4°S of Pleiades
25	19:37	Regulus 0.2°S of Moon
26	9:36	Moon at Descending Node
30	3:17	Spica 1.8°N of Moon

Membership

Members: 90

We had seven renewals in March, thank you!

Reminder

It's a new year, don't forget to renew your membership.

Meeting Minutes

Warren Astronomical Society

Board Meeting

2/24/2026

Board members present: Diane Hall, Jonathan Kade, Riyad Matti, Mark Miles, Vatshalya Dandibhotla

WAS member present: Dale Thieme

Diane Hall brought the meeting to order at 7:03pm

Officer Reports

President: Diane Hall welcomed our new treasurer, Mark Miles, reminded the board that we were still without a secretary. Suggestion that a plea go out in the e-mail was made. Diane would continue to announce that a snack captain was needed, if we were to continue to have snacks at the meetings. She mentioned the coming FAAC Swap Meet on March 28 and entertained discussion on sharing a table or two with Mark Kedzior and move some more items from the dob shed. She inquired about what he Selfridge event was, following discussion decided to check with Bob Trembley. She also pointed out that, rather than reschedule the canceled February event at CIS in March, Mike Narlock requested an August partial solar eclipse watch on the 12th (followed by a Perseids party) and a lunar partial eclipse on the 27th for us to assist with.

Outreach: In Jeff MacLeod's absence, Diane asked Jonathan to talk about the upcoming Belleville Library opportunity. He said that he and maybe Adrian Bradley and Jeff Kopmanis from the Low Brows would be doing an observing event, with Jonathan presenting "Astronomy 101", and, if too cloudy, a show and tell. He was also scheduled to appear on "Astronomy for Everybody", a local access show.

1st VP: Jonathan reported that he had four new talks scheduled since the last board meeting and was working on getting back-up talks set up in case of no-shows.

2nd VP: Riyad reported that he was still waiting for a selected finder scope to come into stock. He and Mark Kedzior would attend to some leaks that developed in the roof. He still had the $800 from the Meade telescope sale and would pass it on to Mark Miles next chance.

Publication: WASP is approaching completion.

Old Business:

The By-Law vote that hasn't happened yet was discussed and it was decided to announce at the March Cranbrook meeting again and vote on at the April meeting, per the by-laws.

New Business:

Dale Thieme reported that he was now the primary account holder on PayPal and would be adding Mark to the account. Also, for purposes of managing payment links, adding Jonathan and Vatshalya in support roles. Jonathan reported that we have a credit card reader now.

Diane reported that the club laptop was now in her possession, Bob Trembley still had the club projector.

Diane was working on how to get Ken Lard's award to him.

Motion to adjourn made by Riyad Matti, seconded by Mark Miles. Motion carried.

Meeting adjourned at 7:41pm

Warren Astronomical Society

Cranbrook Meeting

3/2/2026

The meeting opened at 7:00pm, with 30 present at Cranbrook, 18 on Zoom and 5 on YouTube.

Following introductions, Diane Hall announced we have a new treasurer, Mark Miles. We're still looking to replace Charlie Strackbein as secretary. She also mentioned that we still don't have a snack captain, namely someone to co-ordinate bringing snacks to the meetings. We also have an interclub event coming up on the 28th, the Ford Amateur Astronomy Club's annual swap meet from 9 to 3 at the Henry Ford College in Dearborn.

Officer Reports

1st VP: Jonathan Kade reported that we have a fairly well-set calendar. We do have openings this summer, starting in May in Macomb. If anyone is interested in presenting, and haven't done one before, he would be happy to give a quick, run-through on his approach.

2nd VP: Riyad Matti said the open house was February 28th, this last Saturday. Unfortunately, it was, cloudy and snowing. However, even with that, we still had about 12 to 15 Members and visitors that came out, so we still, had a little bit of time to talk about astronomy and telescopes, especially with the new people that showed up. Riyad turned over the $800 for the 12-inch Meade sale to Mark Miles, who also purchased the 10" scope that we had on sale for a year or so, plus a small Celestron refractor. Which is making more room in the Dob Shed. Now our next open house is going to be on Saturday, March 28th, at 7:00pm.

Treasurer: Diane introduced Mark Miles to the club.

Outreach: Jeff MacLeod reported that the Bellville Library event went pretty well, while the Cranbrook event was canceled again, the next would be about six months out. Jeff then gave out Night Sky Network pins for outreach. Recipients were Ken Bertin, Marija Bognar, Mark Kedzior, Jim Lawlis, Riyad Matti, Dave Noble, Dale Partin, Bob Trembley, and Tina Wong.

Sub Groups

Solar: We had the first spotless day since 2022. Decline started?

Double Stars: Besides the seasonal double stars, we'll be looking at Tau Corona Borealis for any developments.

Radio Astronomy: Tom Hagen suggested starting a Discord

for the radio group, possibilities of a Radio Jove at Stargate, along with other project ideas.

Observing Reports

Jonathan said he and Adrian Bradley did a public astronomy event at the Belleville District Media Center, which is actually quite a ways from downtown Belleville And the skies would be really nice there if not for the fact that it's next to a police station and it has a bunch of extremely bright spotlights around it. But we had a great time, despite the fact that there were clouds. We were observing the conjunction of Jupiter and the Moon. The moon poked through the clouds easily, and eventually Jupiter joined it. And it was a really cool, arrangement, because the Moon and Jupiter were on one side of a giant rectangle, and Castor and Pollux were on the other side. So there was this beautiful rectangle of celestial objects up there. Later in the night, when more clouds cleared out, we showed people various objects, including the Orion Nebula. We had about 30 people out, and it was lots of fun. And they've invited us back to do solar observing this summer, and then a fall event as well.

Parker Huellmantel got the 10-inch job that was advertised in the last Wasp. And, he broke it in with the Beehive Cluster and with NGC1981.

Diane asked Bob Trembley to shed some light on the lunar eclipse: He said, "Well, it starts tonight at, like, 3 AM, and, totality starts at 6 AM, which... I'm not really sure, but that should be starting to get light then. Which is annoying. And, totality ends at around 7 something, I don't know what it is, but an hour or so later, and it's... it will... it will be light then. So it might make for some interesting pictures, I don't know, you might have some blue sky with, some red moon, but, if it's clear, go out. It starts at 3 AM, so it will be dark when it starts.

Official Business:

Diane reiterated the amendment proposal brought before the club last year, but not voted on. Following by-law procedures, this will be voted on at the April Cranbrook meeting.

She also announced our Paul Strong Memorial Scholarship winner for this year: Kayla Boitnott

Short Talk

Jonathan introduced Jeff MacLeod, who spoke to the group on "Measuring the Distance to the Moon (the Old-Fashioned Way)", which involves such ancient technologies as water clocks.

Main Talk

Following a short break, Jonathan introduced Rik Hill with his talk on Lunar Imaging. (His work can be seen monthly in the WASP-Ed.)

The meeting ended at 8:48

Warren Astronomical Society

Macomb Meeting

3/19/2026

The meeting began about 7:10 with 22 at Macomb, 11 on Zoom, and 5 on YouTube.

Diane Hall opened the meeting with officer reports.

President: Diane reminded the group of the upcoming FAAC swap meet, March 28. She stated there would be no Selfridge air show event this year for outreach. Diane also pointed out that she, Mark Miles, and Dale Thieme would meet at Bank of America to get Mark on the account so that he could do treasurer duties. And- we still need a secretary.

1st VP: Jonathan Kade invited anyone who would like to present but don't have an idea, see him for suggestions.

2nd VP: In Riyad Matti's absence, Diane reminded the group of the open house coming on the 28th of March, well after the swap meet concludes.

Treasurer: No report yet.

Outreach: In Jeff MacLeod's absence, Diane pointed out that the next Cranbrook outreach event possibly scheduled will be in August for partial Lunar and Solar eclipses and the Perseids.

Publications: The WASP is up, be sure to submit articles to publications@warrenastro.org.

Subgroups

Solar: Bob Trembley reported that we have 5 numbered sunspots on the Sun's face right now. Ar4392 is larger than the Earth. NOAA reports a couple B-class solar flares over the last day, and that one sunspot has a beta-gamma magnetic field posing a threat for M-class solar flares. NOAA's latest forecast predicts two CME impacts this week, first on March 19th, second on March 21st. This is a timing double blow is perfect for amplification by the Russell McFerran effect. There are moderately strong G-class geomagnetic storms are possible every day for the rest of the week, so look for auroras.There are a couple coronal holes on the Sun, a really big one in the southern hemisphere, pouring out solar wind toward us, and another one crawling onto the face of the sun that is also pouring out solar wind.

Double Star Group: Double Star will be meeting, as usual, at the Stargate Open House Saturday after this upcoming Saturday, again, the 28th. So Riyad will be there with his fancy eyepieces to split Double Stars as seasonally appropriate.

Astrophotography: Dave Noble shared his capture of the Monkey Head Nebula, Dale Thieme shared some Aurora photos his sister, Lynn Czarniawski took on her Norwegian trip.

David Levy offered up selections from a poem by John Dryden (in 1667):

To see this fleet upon the ocean move,
Angels drew wide the curtains of the skies;
And heaven, as if there wanted lights above,
For tapers made two glaring comets rise.

Whether they unctuous exhalations are,
Fired by the sun, or seeming so alone:
Or each some more remote and slippery star,
Which loses footing when to mortals shown.

Or one, that bright companion of the sun,
Whose glorious aspect seal'd our new-born king;
And now a round of greater years begun,
New influence from his walks of light did bring.

Have you not seen, when whistled from the fist,

Some falcon stoops at what her eye designed,
And with her eagerness the quarry missed,
Straight flies at check, and clips it down the wind?

Ask an Astronomer

Q: How do we know that what blew up over Ohio in the night is a meteoroid versus an asteroid?

A: There's a lot of dust in space, so when you see a meteor through, through, going through the sky, that can be a size of a grain of dust. Before that chunk of dust hits the Earth's atmosphere, it is a meteoroid. Anything larger than a meter, say about like that, is an asteroid. The thing that hit the Earth was an asteroid, and you can tell when something like that blows up in the atmosphere, you'll see the line, it goes really fast through the sky, and it'll go flash, flash, and you can see a line in the sky. Space debris, space junk re-entering, goes really slow, and it often fragments into several different pieces.

The one over Ohio was estimated to be 6 meters, about the size of a small car.

Following a short break, Jonathan introduced Bob Berta, who gave a talk on Astronomy Factoids, a collection of bits of astronomical information that he shares with the public to help with engagement.

The meeting concluded at 8:47

Star Parties are gatherings of astronomers and interested casual stargazers to share their love of the sky and to learn about star gazing equipment and techniques for visual observing and astrophotography from each other. Typically in dark, remote locations, star parties usually happen during the dark of the moon, sometimes lasting for a few days.

But in order to have a star party event with people at different locations, they need a way to communicate with each other and share the experience in real-time. With the advent of video conferencing, live-streamed broadcasting, live chat from the audience across social media platforms, and simulcasting software and the possibility of screen sharing and remote control of telescopes, the concept of a virtual star party was born. Explore Scientific's Explore Alliance admins began experimentation with virtual star parties, successfully learning how to connect astronomers with a general audience, and quickly expanded globally. The Explore Alliance's "Virtual Star Party" is now called the "Global Star Party" (GSP) is held at least weekly. Announcements are made on explorescientific.com/live, through direct email, and in social media.

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 $9.00 annually,
(Membership starts July 1)

alcor@warrenastro.org

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