



Vol. 50, no. 1



January, 2019

The W.A.S.P.

The Warren Astronomical Society Paper

Happy New Year!



Photo: Dale Thieme

The 2019 Board of the Warren Astronomical Society

Left to right: Dale Partin (Publications Director), Jerry Voorheis (Secretary), Jeff MacLeod (President), Jonathan Kade (1st Vice President), David Baranski (2nd Vice President), Bob Trembley (Outreach Director). Not pictured, Mark Jakubisin (Treasurer).

The WASP

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



Dale Thieme, Editor

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Outreach	Bob Trembley	outreach@warrenastro.org
Publications	Dale Partin	publications@warrenastro.org
Entire Board		board@warrenastro.org

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

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

Membership and Annual Dues

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

Astronomical League (optional)\$7.50

Send membership applications and dues to the treasurer:
c/o Warren Astronomical Society, Inc.
P.O. Box 1505
Warren, Michigan 48090-1505
Pay at the meetings
Also via PayPal (send funds to treasurer@warrenastro.org)

Among the many benefits of membership are

- Loaner telescopes (with deposit). See 2nd VP.
- Free copy of each WASP newsletter.
- Free use of Stargate Observatory.
- Special interest subgroups. See chairpersons.
- Free use of W.A.S. library. See librarian.

The **Warren Astronomical Society Paper** (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.

Library. The Society maintains a library of astronomy-related books and periodicals at the Cranbrook meeting location. See the librarian, Jonathan Kade, to check out a book.

Snack Volunteer Schedule

Jan 7	Cranbrook	Marty Kunz
Jan 17	Macomb	Ken Bertin
Feb 4	Cranbrook	Jerry Voorheis
Feb 21	Macomb	Dale Partin

If you are unable to bring the snacks on your scheduled day, or if you need to reschedule, please email the board at board@warrenastro.org as soon as you are able so that other arrangements can be made.



Discussion Group Meeting

Come on over, and talk astronomy, space news, and whatnot!

This month's meeting is **January 22, 2019** at 7:30 pm, hosted by Gary Ross at his home in Royal Oak.

1828 North Lafayette
Royal Oak

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The work of Dale Thieme in doing much of the effort in preparing this issue of the WASP is gratefully acknowledged.

The WAS Board

2018 Annual Banquet

Dale Thieme, field reporter



Photo: Jon Blum

This year's banquet challenge was "try to find a parking space". Turns out DeCarlos was the place to be for half the populace of the Metro Detroit area that night. If you were lucky enough to find a landing spot, a fine evening would follow. Those who arrived early were treated to a bit of a fashion show, Jon Blum and Jeff MacLeod showed off their NASA jackets (left). Diane Hall and Jonathan Kade brought back the 20's look and, if we gave one out, would get the award for most adorable couple.



Photo: Dale Thieme

Once settled in and the dining done, we commenced with recognizing those who presented at the

meetings over the past year. An impressive list made more so by some members who presented several times. Then the awards were given out: The Bob Watt Award went to Doug Bock, the Blaine McCullough Award given to Brenda Walker, Gary Ross received the Larry F. Kalinowski Award and finally, Diane Hall was surprised with the E. John Searles Award. A well-deserved congratulations to all.

Jim Shedlowsky regaled us with his renderings of well-known songs in an astronomical frame of mind with background stories to each. His brother, T.J. joined at the end and we were treated to my favorite Everly Brothers number, "Bye Bye Love"

The evening finished off with the distribution of the door prizes. I think nearly everyone present left with at least one goodie. Along with many contributions by our generous club members, we thank



Photo: Ken Bertin

Apache-Sitgreaves Research Center, Celestron, Cranbrook Institute of Science, Oberwerk, Orion, Sirius Astro Products, and Sky and Telescope for their excellent donations to the prize table.



Photo: Ken Bertin



Photo: Jon Blum

AWARDS



Photo: Ken Bertin

E. John Searles Award

Full-Spectrum Astronomer

This year's award went to a stunned Diane Hall. Serving on the board as President, First V.P. and Outreach Chair in various years, her dedication to the functioning of this organization exemplifies the spirit of the award.

Larry F. Kalinowski Award

Second Best Observer in Michigan

The Larry Kalinowski Award goes to Gary "why me?" Ross. More than just a member, Gary continues to delight and amaze with his tales of observing adventures and sets a high bar with his efforts in our public events and hosting Discussion Groups.



Photo: Dale Thieme



Photo: Ken Bertin

Blaine McCullough Award

Shining Enthusiasm

Brenda Walker received the Blaine McCullough Award. With barely over a year of membership behind her, Brenda came charging out of the gate, participating in many of our public events, while learning to use her own telescope. Well, done!

Bob Watt Award

Build It and They Will Come

On behalf of Doug Bock, Joe Tocco accepted the Bob Watt Award. According to reliable sources, Doug actually thought he might get a break from the Michigan Nebula that night and remained at the observatory. This photo is from the old construction, tune in March when he will tell us about the new observatory just finished.



Photo: John Lines

Group Hug! Some Mandatory Group Photos

WAS presidents, past and present

Below, left to right: Riyad Matti, Ken Bertin, Gary Ross, Jon Blum, Diane Hall, Bob Berta, Jeff MacLeod, Jonathan Kade.



Photo: Jon Blum



Photo: Dale Thieme

The Women of WAS



Photo: Ken Bertin

The Happy Awardees

The 2018 Board

Left to right: Jerry Voorheis, Ruth Huellmantel, Diane Hall, Jonathan Kade, Jeff MacLeod, Joe Tocco, Brian Thieme.



Photo: Dale Thieme

Remembrance



Glenna J. Harrington

Official Obituary

A lifelong resident of Troy, Michigan, and a 1966 graduate of Troy High School, she is survived by her husband of 38 years, David Harrington, her mother, Catherine Drake, of Fenton, a sister, Janice Drake, of Holly and a brother, Rick, in Finland. She is also survived by her six children, David Harrington of Metamora, Deborah Kusza of Waterford, Cynthia Harrington of Pontiac, Shawn Kuretich of Madison Heights, and Stacy Bryce and Russell Harrington of Beaumont, Texas. She also has nine grandchildren and ten great-grandchildren. She was born on July 20, 1948 and passed away at the age of 70 on December 5, 2018.

She excelled at cooking, and greatly enjoyed decades of world travel to many famous destinations. She was an avid eclipse chaser and viewed eleven total solar eclipses and two rare transits of the planet Venus at twelve different locations around the globe. She was fond of saying that Neil Armstrong stepped on the moon just to help celebrate her 21st birthday.

She will be dearly missed by her husband, family and dear friends.

From Dave Harrington's email:

Glenna was a WAS member for the last 35 years (although not active in the last 20 years of so), and many of the old timers like Marty, Joe and Doug Bock will remember her. She was an avid eclipse chaser and viewed ten total solar eclipses and both transits of Venus, with the 2004 transit viewed from Victoria Falls in Zambia.

Excerpt from the notice by Jonathan Kade to board:

Glenna Harrington joined the club in the early 1980s. In the years since, she traveled around the globe with W.A.S. members to many solar eclipses and both Venus transits. Her husband, former W.A.S. president Dr. David Harrington, was already a long-time member and eclipse addict when they married. A number of years ago now, Dave gave a wonderful photo presentation reviewing their adventures around the globe in pursuit of the solar corona. I found this account of their relationship and spirit of adventure to be an inspiration and a goal in my own life. Glenna's presence at the club and at "W.A.S. alumni" gatherings will be greatly missed.



President's Field of View

You stumble your way off the roller coaster, lean against a guardrail and take a moment to regain your composure. The spin slowly stops, you can lift your head again, you take a deep breath in of fresh air and you start to hear the excited cries of a child, "Let's do it again, let's do it again!" So here we go again, a new year, a new semester, a new board!

I would like to say a final farewell to the outgoing board. Joe, I will miss not having you on the board, but I know you will always be at Stargate, so I suppose I will survive. Ruth, you did a wonderful job as treasurer and I can't thank you enough for sticking with it as busy as your real job has you. Diane, words can't express how much the club will suffer without you in a leadership role, but I know you will still be an active member and whisper good sense into Jonathan's ears. Brian, I am so glad that your contributions to the WASP were recognized by a higher authority, you truly are a cut above and it was great having your talents in this club, your shoes will not be filled for quite some time.

I would like to say hello to our incoming board. I am very pleased to have some new face on the board this year. When I say new face, I mean members that have never served on the board before, this is how it is supposed to work! David, I am sure you will love the second VP position, I know I did and everyone else that has done it. Bob, you are an old face, but I'm thrilled to have you back in the outreach chair, we are going to do great things...and talk a lot of Kerbal Space Program. Mark, you have been called the savior (by me), it's not the fun job but it's the job we need. My hope is that you'll find a way that works and enjoy the journey. Dale, you were one of the first people upon hearing about the troubles finding board members to suggest possible solutions, one of which was you taking on a position that was needed. Your flexibility in the matter is much appreciated and I am thrilled to have your intellect on the board again.

And to my board that is sticking around. Gerry, I know you had thought about leaving the board, so thank you for holding out for one more year. Secretary sounds like an easy job because the report is always "Minutes are in the WASP" but as a former secretary I know you have to be ever vigilant, recording every moment as it happens, it's not easy, so I thank you. Jonathan, what can I say, you are my rock. In mathematical terms you are a constant, your dedication to this club is unwavering and unyielding, and

(Continued on page 7)

(Continued from page 6)

we need you. By my count we would need five people to replace you, I can't thank you enough.

As for 2019, we have some great stuff already in the works. We have a Lunar Eclipse the 20th of January and there will be events at both Cranbrook and Stargate. Bob Trembley and his wife are putting together another MEGA Astronomy Night at Endeavor Middle school March 12th. Then we have our annual Picnic, which unfortunately could not be scheduled on July 20th but will take place on the 27th. If the date July 20th doesn't sound significant let me refresh your memory, July 20th, 2019 will mark the 50th anniversary of man's first steps on the Moon. We will be having a special event at Stargate to celebrate this occasion. Then it's Astronomy at the Beach and we're back to the banquet, wow 2019 just flew by. I look forward to remaining your president in this sure to be historic year and I hope to see you all at Cranbrook, Macomb, and Stargate.

Jeff MacLeod,
President



Letters

WACKED IN WINDSOR

Although without "open bar", the Christmas *fete* of the Royal Astronomical Society, Windsor Centre, is a delightful pot-luck at the Ojibway Nature Centre south of town. My invitation must have been lost in the post, because I had to stumble upon it whilst looking at the web-site: 14th of December, providentially the day after our banquet.

I responded chop-chop, declaring my attendance with a vat of to-die-for cole slaw with the chunks of cheese and bell pepper, for which I am celebrated every where. On the date, I crossed into the Commonwealth prepared for the *pro forma* question: "Are you bringing any thing in"? Absolutely, that an ocean of cole slaw was in the car, so the pleasant Customs man asked if it was home-made. What an opening! Suppressing an urge to reply in French, having once been advised against, I said it might not be the best in Canada, but was certainly the best in Windsor-Essex.

This is not a cooking show nor some "foodie" site, so one skips the toothsome delights at the R.A.S.C. There is a darker aspect . . .

To awe the natives, I even brought/set up the 5-cm. refractor which has brought glory right into the pages of the Observer's Handbook. After the dinner was effectively over, a woman unleashed a little game: "Constellation Quiz". Four pages, forty-three questions, with diagrams galore and fill-in-the-blank responses. Intoxicated with triumph at the Warren Society banquet, I reckoned to show them How It Was Done. I rode into the fray in the spirit of Charles the Rash (of Burgundy) at his *final* engagement, or, for an American analogy, the British at New Orleans. Then *denouement*, and pardon my French:

Defeat! Not by only one fellow contestant, either. I did not get the best score — or even second-best. The meeting chamber reverberated with cries of anguish mixed with rage. Old vaudeville schtick: "I did not come here to be made sport of" . . . Then what *did* you come here for"? Expecting to dominate the proceedings with tales of my *puissance*, I wound up giving away the unconsumed balance of to-die-for cole slaw — little left — and quietly struck the telescope. Warren's Finest, like "Casey At Bat" had struck out. Merry Christmas, and I am staying away from Windsor Centre for a while. As they say in show business (or film industry): "You'll never work in this town again".

"Until they need you" --- G. M. Ross, 18th of Dec. 2018.

Eulogy to a fallen knight:

While thou hast fallen in battle brilliantly, thou hast triumphed in telling the tale. Truly, the pen is shown mightier than the sword!

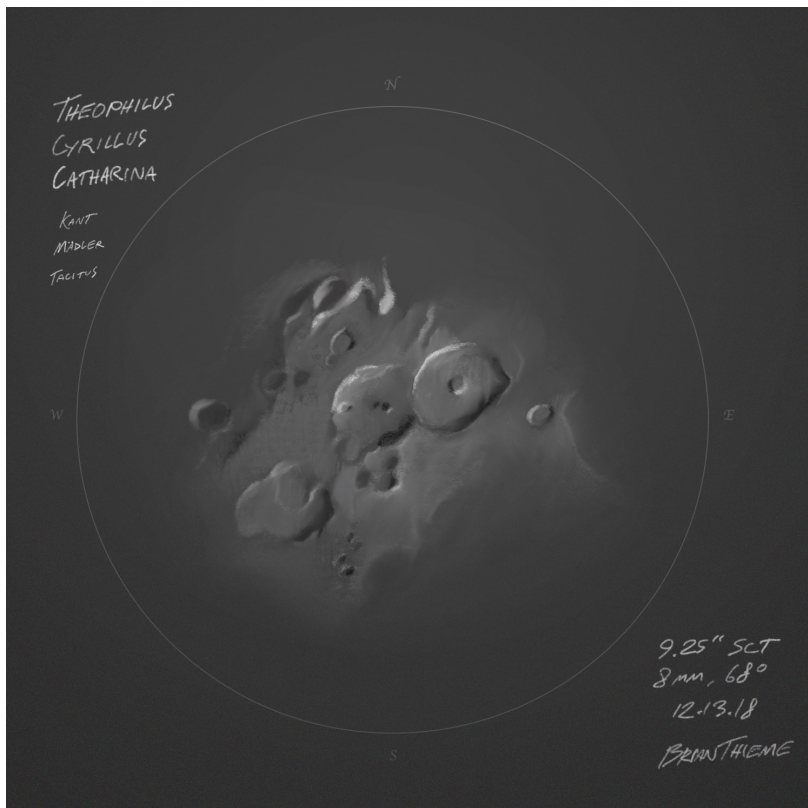
The Warren Astronomical Society





M101 The Pinwheel Galaxy
21 million light-years from earth
by Bill Beers 7/30/17

Image by Bill Beers



Drawing by Brian Thieme



Happy New Year!

*From Bill Beers
at the
C. W. Sirius Observatory
Cadillac, Michigan*



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

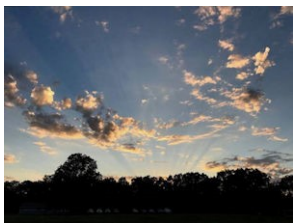
Order your 2019 Warren Astronomical Society calendar now!

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

- Doug Bock - Fireworks Galaxy, NGC6946
- Bill Beers - The Orion Nebula, M42 and M43
- Bill Beers - Caroline's Rose, NGC7789
- Dale Thieme and past WASP editors - 50 Years of The WASP
- Bill Beers - Pinwheel Galaxy, M101
- Doug Bock - The Dumbbell Nebula, M27
- Bob Berta - The Southern Milky Way
- Doug Bock - Full Moon in Color
- Jonathan Kade - Crepuscular Rays at Stargate
- Joe Tocco - Nebulas of Cygnus
- Stargate Observatory Turns 50
- Doug Bock - Stephan's Quintet and Deer Lick Group
- Doug Bock - Boon Hill Aurora and Star Trails

You can buy calendars for \$15 each at the next few meetings. [You can also order them online.](#) (But you still have to pick them up in person or find a kind fellow member to mail it to you.)

Buy Yours Today



Presentations

Monday, January 7, 2019 Cranbrook Presentations

Short Talk: "In Search of... the Blue Planet"

Former W.A.S. President and Second Greatest Observer in the State of Michigan Gary Ross presents a personal account of the quest for Neptune with a very small refractor in suburban skies.

"We're in this for the sport, 'cause it ain't for the money". Amateur astronomy is equally science plus pleasure in natural phenomena, with over-lap but not the same. Why wait for observing in optimal conditions, when one can do it *now*? The most common analogy is "better to light one candle than . . .".

Solar system observing is not only possible in an urban environment, but positively inviting. See: "Astronomy in the Big City" series in the *Inside Orbit* of the Grand Rapids Association. A very clear twilight, a crack portable telescope, but no spare money for the saloons of Royal Oak, and the conditions are ripe to go very far out.

A brief synopsis of the life of Gary Ross, in bullet-points:

- Have vast formal education, most of which regretted.
- Have never used a computer to find *any* thing in Astronomy.
- Have never taken a digital astro-picture.
- Finished first telescope mirror in the second Eisenhower administration.
- Witnessed the launch of Apollo XVII.
- Have given up the Life of the Mind.

Long Talk: "How Satellites Work: The Compton Gamma Ray Observatory"

Kevin McLaughlin will use his experience in the satellite industry to give us a case study in practical satellite design, using as an example a really important space observatory

he helped create.

Kevin will review NASA's Great Observatory program, the role of the Compton Gamma Ray Observatory, and its major findings. He'll walk us through the major program phases of a satellite, including deciding on and implementing major mission requirements, designing and building the hardware used by the observatory to fulfill those requirements, dealing with the realities of operations in space, and more.

Kevin McLaughlin was involved in the validation of the attitude control during the design phase for the Compton Gamma Ray Observatory, wrote a simulation used to validate all safety logic for the observatory, and was responsible for on-orbit operation of the attitude control and propulsion subsystems as a lead engineer.

Thursday, January 17, 2019 Macomb Presentation

Meeting room change: at the time of publication, we are going back to our original location in the Library Building. Watch for the meeting notice email if there are any changes.

"2018—In the News"

We'll have former W.A.S. President Ken Bertin and several club members recap the biggest astronomical stories of 2018.



If you're shopping on Amazon, make sure to use Amazon Smile. It costs you nothing, and if you select us as your charity, Amazon will donate 0.5% of every purchase you make to the Warren Astronomical Society.

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.



Over the Moon

With Rik Hill

"Johnny we hardly knew ye!"

In my posting (North by northwest) where I focused on Pythagoras, I pointed out a barely discernible large crater J. Herschel (dia. 160km), named after John Herschel but often ignored or overlooked ("we hardly knew ye"). Here it is about 2 days earlier in another lunation, a much more impressive walled plain some 3.8-4.5 billion years old, strewn with smaller impacts. On the lower left wall is Horrebow (26km) still deep in shadow with Horrebow A forming the upper part of a figure-8. Above Herschel is a sinuous ridge that is a combination of the eastern walls of Anaximander (the lower portion) and Carpenter that curves west.

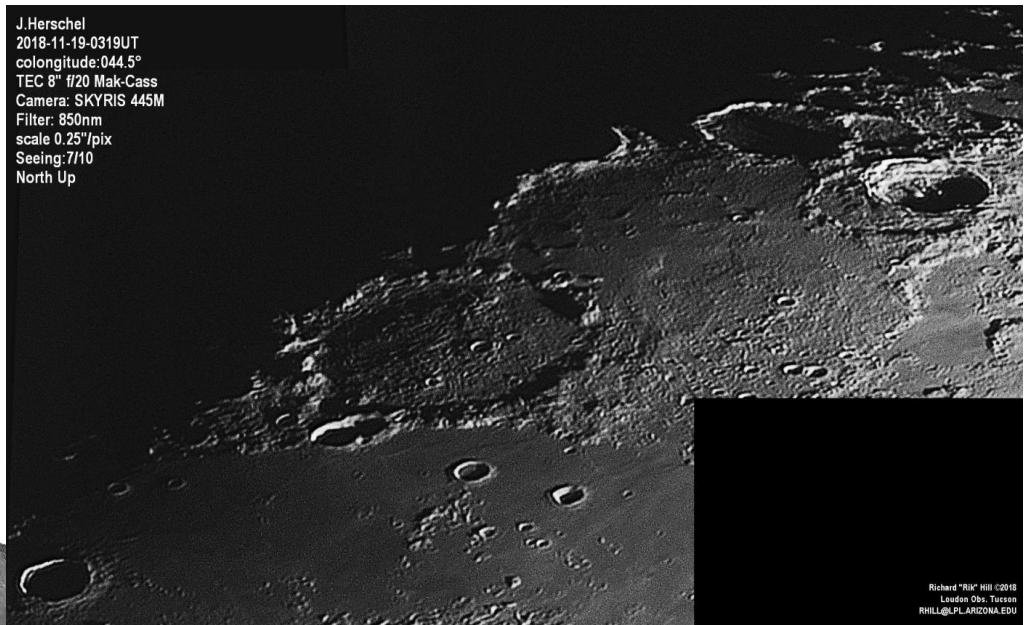
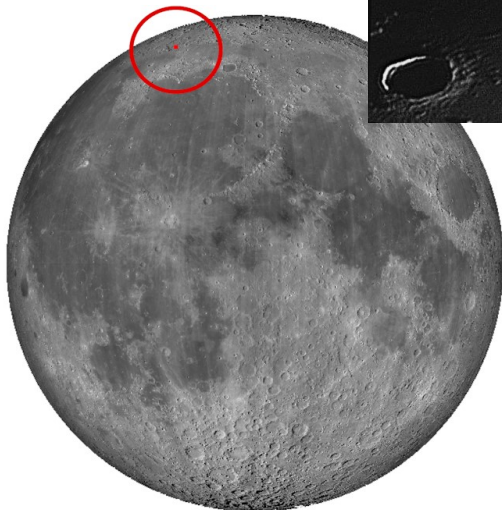
There are two large craters to the upper right. The largest with shadows crossing its floor, is Anaximenes (82km).



to the east of it is Philolas (73km), an obviously fairly young crater with clearly terraced walls sitting in the remnants of a larger, very ancient (unnamed) crater. In the lower left of this image is the crater Harpalus (41km) which has a nice radial ejecta pattern but it cannot be seen at this lighting.

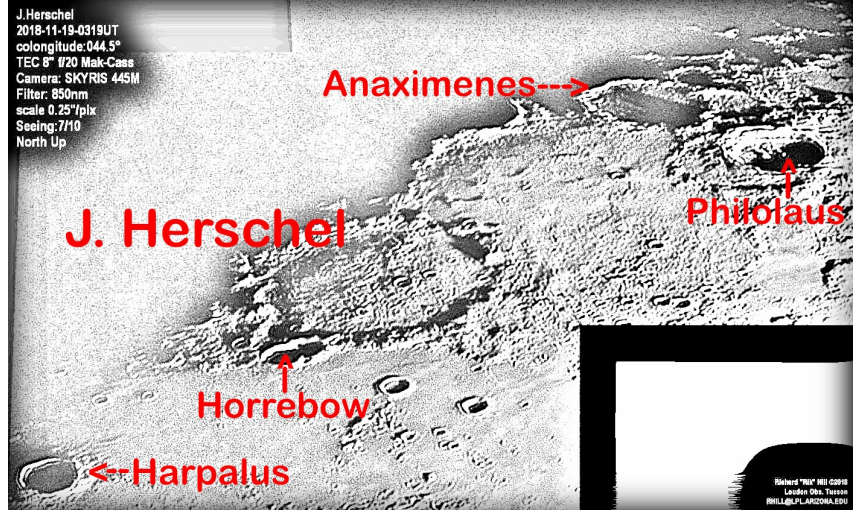
This two image montage was made from stacks from two AVIs using AviStack2 and further processed with GIMP and IrfanView.

Rik Hill



J.Herschel
2018-11-19-0319UT
colongitude:044.5°
TEC 8" f/20 Mak-Cass
Camera: SKYRIS 445M
Filter: 850nm
scale 0.25"/pix
Seeing: 7/10
North Up

Richard "Rik" Hill ©2018
London Obs, Tucson
RHILL@UPL.ARCORNA.EDU



J.Herschel
2018-11-19-0319UT
colongitude:044.5°
TEC 8" f/20 Mak-Cass
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North Up

Richard "Rik" Hill ©2018
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Object of the Month

By Chuck Dezelah

January

Object of the Month: NGC 1662



NGC 1662 is an open cluster in the constellation Orion. The cluster was discovered in 1784 by William Herschel and was later added by his son John Herschel to the General Catalog of Nebulae and Clusters, published in 1864. NGC 1662 has an integrated apparent magnitude of 6.4 and an angular diameter of about 20'. It has a Trumpler classification of I2p, indicating that it is strongly concentrated and well separated from the field stars, has a moderate range of stellar magnitudes, and is "poor" in terms of total number of stars. The cluster is 1400 light years away, approximately 420 million years old, and is part of the Orion Arm of the Milky Way Galaxy.

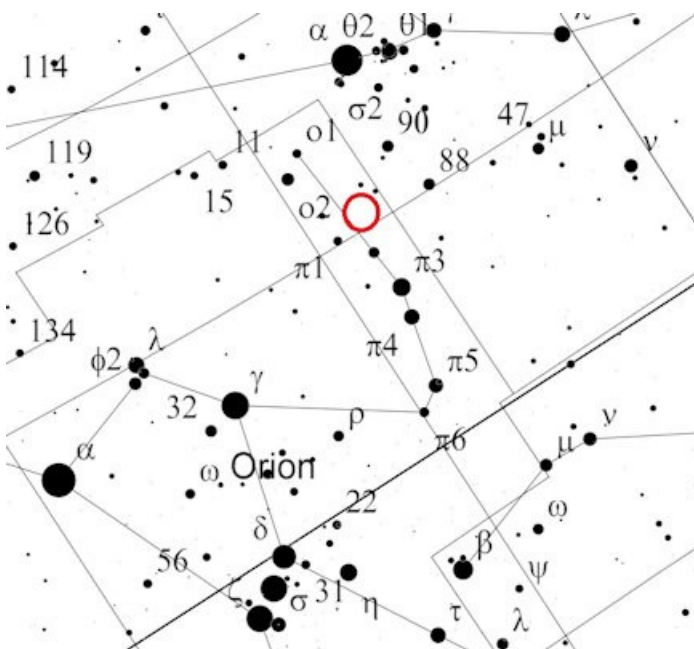
NGC 1662 is easy to locate, sitting within the northern end of Orion's bow, about 6° south-southeast of Aldebaran (α Tauri, mag. 0.87) and about 10° northwest of Bellatrix (γ Orionis, mag. 1.64). It is positioned about 4° due north of π3 Orionis (mag. 3.19) and less than 2° northwest of π2 Orionis (mag. 4.64), both of which are notable members of the bow asterism. NGC 1662 is fairly bright and has a prominent compact core which should be visible even in 10x50 binoculars under moderately dark skies. Telescopes of 80mm aperture or greater should provide a fine view with at least a dozen member stars easily discerned. Larger



Source: Digitized Deep Sky

telescopes should allow for easier resolution of some of the star pairs contained within the cluster, as well as improved visibility of two prominent arcs of stars running northeast and southwest from the central concentration. These star arcs create an attractive overall arrangement, somewhat reminiscent of a "Bird of Prey" spaceship made famous from appearances in a well-known science fiction television series. Of particular note are an 8th magnitude red giant star that lies within the cluster and a binary pair of 9th-10th magnitude stars at the terminus of the northwest chain.

Chuck Dezelah



Source: Cartes du Ciel

Warren Astronomical Society

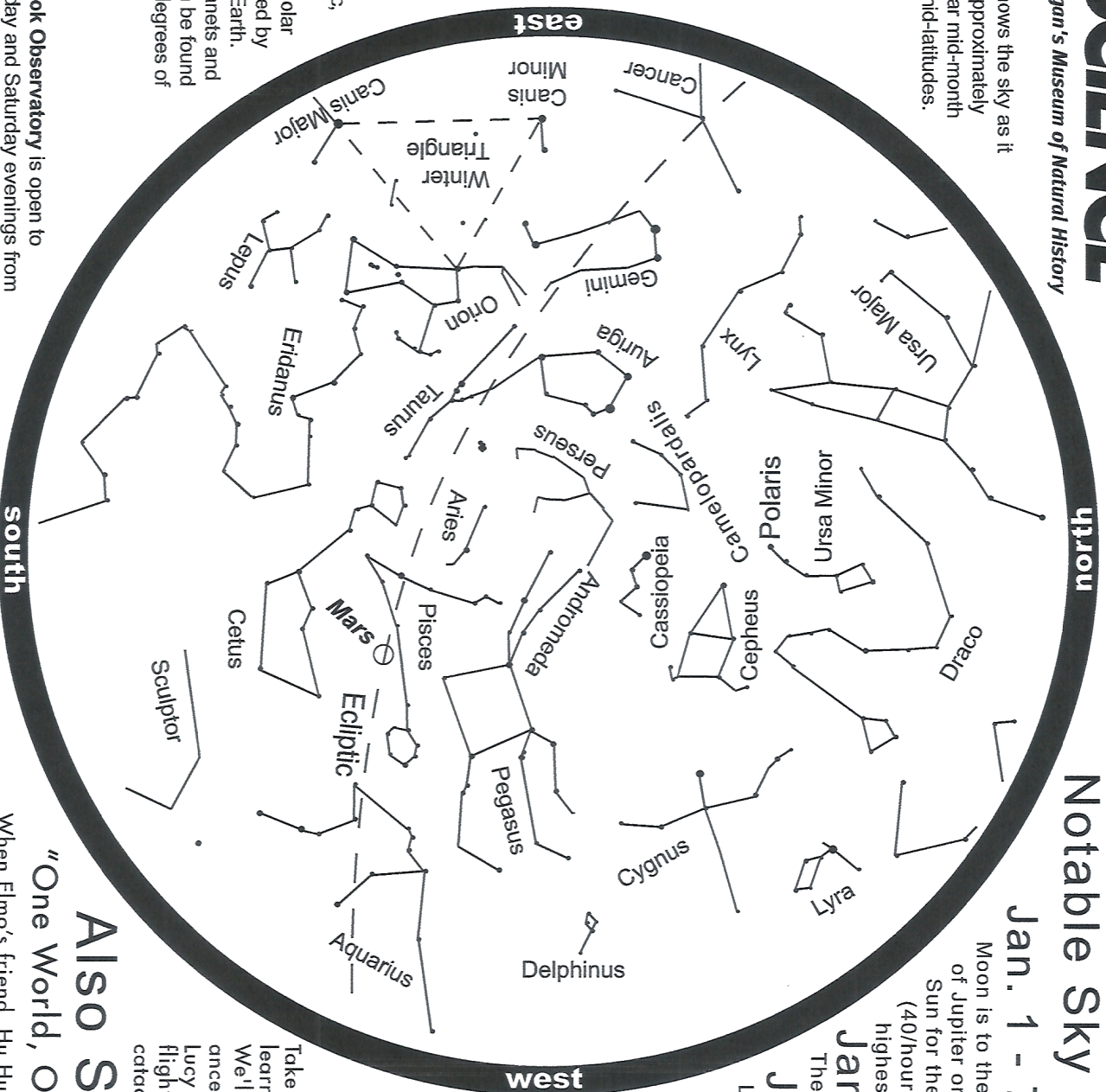
Your Name Here

Club Member Name Tags

Email publications@warrenastro.org for your personalized name tag



This chart shows the sky as it appears at approximately 7pm EST near mid-month at northern mid-latitudes.



Notable Sky Happenings

Jan. 1 - 7

Moon is to the upper right of Venus on the 1st and to the left of Jupiter on the 3rd (SE predawn). Earth is closest to the Sun for the year on the 3rd. The Quadrantid Meteor Shower (40/hour) peaks on the night of the 3rd. Venus is at its highest above the horizon on the 6th (SE predawn).

Jan. 8 - 14

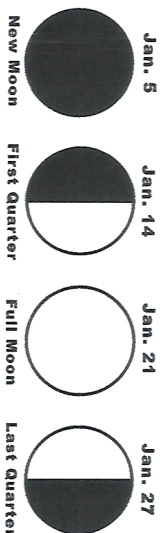
The Moon is left of Mars on the 12th (SSW evening).

Jan. 15 - 21

Lunar Eclipse on the 20th-21st. Partial begins 10:34pm, total begins 11:41pm, max 12:12am, total ends 12:43am, partial ends 1:50am.

Jan. 22 - 31

Close alignment of Venus and Jupiter on the 22nd (Venus is upper left SE predawn). The Moon is between the two on the 31st.



Now Showing

"Dinosaurs at Dusk"

Take to the skies and discover the origins of flight! It's a learning adventure of a father and his daughter, Lucy. We'll travel back in time to meet the pterosaurs and the ancestors of modern-day birds: the feathered dinosaurs. Lucy and her father look for clues about the origins of flight. When time runs out, they experience first-hand the cataclysmic "last day" of the dinosaurs.

Also Showing

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

When Elmo's friend, Hu Hu Zhu, visits from China. Big Bird, Elmo and Hu Hu Zhu take viewers on an exciting discovery of the Sun, Moon, and stars. They learn about the Big Dipper and the North Star and take an imaginary trip to the Moon where they learn that the Moon is a very different place.

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

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

The Cranbrook Observatory is open to the public Friday and Saturday evenings from 7:30 - 10:00pm EST, and the first Sunday of the month from 1:00 - 4:00pm for solar viewing. Come have a look through our 6" telescope! For observatory information visit <http://science.cranbrook.edu/exploro/observatory>

January 1992

The cover story on this issue, "My July 1991 Eclipse Experience" by John Pawlicki had nothing to do with totality, but an adventure in its own right. The Sub Group Reports section remains dominated by "Computer Chatter" by Larry F. Kalinowski. Following a good deal of NASA filler, we get the last regular feature, At the Telescope (Open Star Clusters is this month's topic.)



January 1997

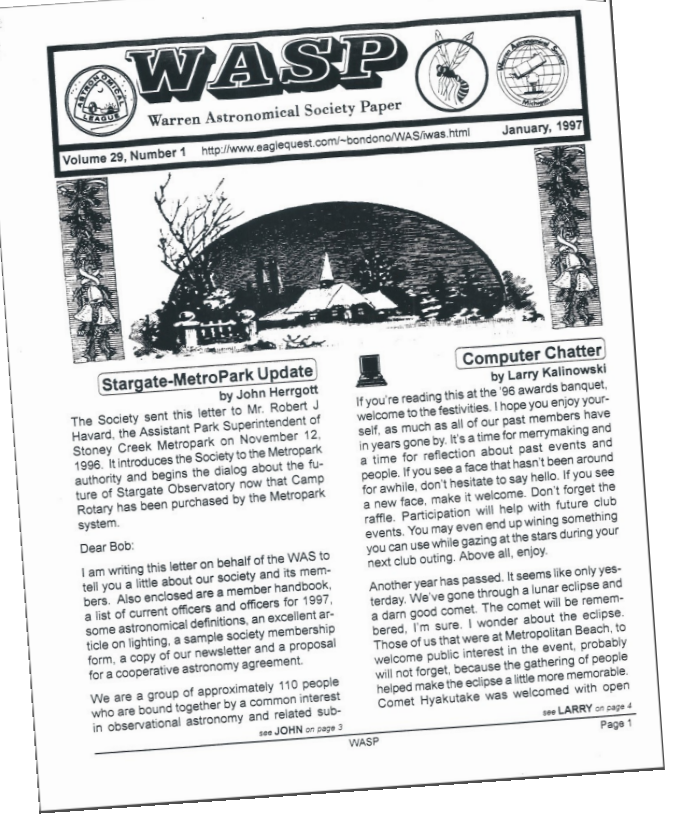
"Stargate-MetroPark Update" by John Herrgott marks the beginning (Nov. 12, 1996) of our association with the Huron Valley Metropark Authority. The Computer Chatter column by Larry F. Kalinowski continues and mentions the finishing of the club's 22-inch Dobsonian. Jeff Bondono winds up the issue with his "Masterpieces Messier Missed" column, featuring NGC 1528 at 04h15m +51d14m.

From the Scanning Room

Fifty years running—Not too shabby for a publication of an amateur astronomical society. March marks the date for the actual anniversary, but I'll spend the whole year looking at how our newsletter developed over the years. First up, typefaces. Several interesting typefaces have graced our newsletter, providing a bit of a challenge in replicating efforts. But my favorite is the Tiffany typeface. I like the rather rakish treatment of the stroke ends. Appearing first in February of 1981, it was utilized in the headings on the masthead page. I've applied it in the cover of this issue.

Speaking of the masthead page, the WASP has used several ways of displaying pertinent club information in one spot, some using the whole page. I've incorporated the single column style which started with the January 1995 issue, very similar to those found in national publications. It also provided a nice way to reincorporate the WASP logo into the newsletter.

The issues highlighted this month illustrate a mainstay of many of the WASP issues: regular columns. WASP editors have relied on these to keep the WASP bursting with great content. Larry Kalinowski's Computer Chatter enjoyed a long run, starting with two entries in 1990 (October and November issues), then a steady appearance from February 1991 through June 1998. His column continued as "Astro Chatter" in July of that year, continuing through December of 2007. An impressive run. Note: As a column name, Astro Chatter was revived in November of 2010 but failed to make it to 2011.



Dale Thieme,
Chief scanner



Stargate Observatory

Monthly Free Astronomy Open House and Star Party

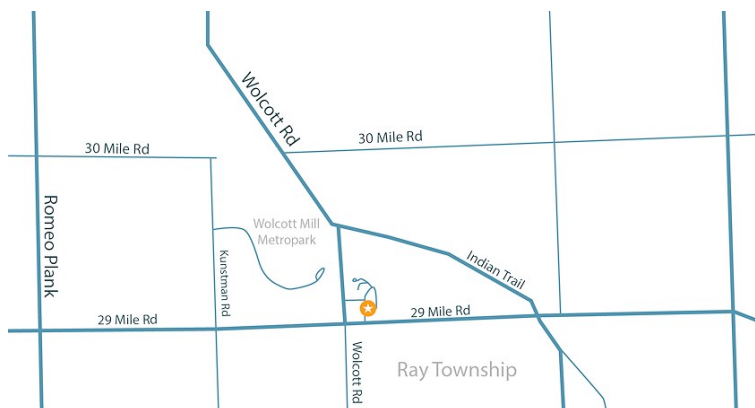
4th Saturday of the month!

Wolcott Mill Metropark - Camp Rotary entrance

- Sky tours.
- Look through several different telescopes.
- 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](https://www.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:

1. Closing time depends on weather, etc.
2. May be closed one hour after opening time if no members arrive within the first hour.
3. Contact the 2nd VP for other arrangements, such as late arrival time. Call (586) 634-6240 .
4. An alternate person may be appointed to open.
5. Members may arrive before or stay after the scheduled open house time.
6. Dates are subject to change or cancellation depending on weather or staff availability.
7. Postings to the Yahoo Group and/or email no later than 2 hours before starting time in case of date change or cancellation.
8. 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.
9. 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

December Open-house

The Observatory was opened at 5:30 PM by Riyad Matti who was also joined by Pat Brown, David Baranski and me.

We hosted about a half dozen visitors and talked with them about astronomy, the observatory and about the club in general. Cloudy skies prevented any observing and David and I closed the observatory just after 7:30 PM when no other visitors showed up.

January Open-house

The January Open-house is scheduled for Saturday the 26th. Sunset is at 5:37 PM with astronomical twilight ending at 7:40 PM. A waning gibbous moon rises at 11:16 PM so we should have a few hours of nice dark skies.

Please arrive just after sunset (or sooner if you plan to set up a scope or do solar observing). A friendly reminder to be courteous if you arrive after dark, dim your headlights upon entry to the park, and no white light flashlights please. If you are setting up a large scope or have a lot of equipment to set up then you are permitted to park on the observing field, with your vehicle lights pointed away from the observatory and other telescopes.

Remember to dress warm and in layers!

Highlights of the Lunar Eclipse January 20-21, 2019

<i>Event</i>	<i>UT</i>	<i>EST</i>
Penumbra first visible?	3:10	10:10 p.m.
Partial eclipse begins	3:34	10:34 p.m.
Total eclipse begins	4:41	11:41 p.m.
Middle of totality	5:12	12:12 a.m.
Total eclipse ends	5:44	12:44 a.m.
Partial eclipse ends	6:51	1:51 a.m.
Penumbra last visible?	7:15	2:15 a.m.

Observatory update

David Baranski has taken over as manager of Stargate Observatory. Wishing him great success and clear skies for all 2019 open-houses.

Joe Tocco
Observatory Chair, 2018

For December we also had a group of scouts and an impromptu Open House on the 8th (details in the Outreach report).

Joe Tocco provided a great tour of the night sky via our telescope and ended with viewing the Orion Nebula, M42.

As the incoming 2nd VP (observatory chairperson), Joe also provided me a tour of the observatory dome.

Although this is only 1 story up, if you have never been on the roof, it provides a rather different look at the park grounds.

David Baranski
Observatory Chair, 2019



Space Pirate Radio

Tune in to Captains Marty Kunz
and Diane Hall for live radio
Wednesday nights at 9:00 pm ET
on
Astronomy.fm

Outreach Report

Past Events:

12/7/18: Diane Hall and Jake Stollman assisted Cranbrook Institute of Science personnel with the Tiger Cub Sky is the Limit event using the indoor telescopes. Twenty-six Scouts and an equal number of parents/chaperones participated.

12/8/18: Scout Troop 1627 was hosted at Stargate Observatory. The Observatory opened at 6:00 PM under cold clear skies. Riyadh Matti, Pat Brown, Brian Thieme, Marty Kunz and David Baranski were all present and assisted Observatory Chairman Joe Tocco.

Joe reports: *The Scouts (4 adults and 8 teenage boys) arrived at 7:30 PM. Skies were cloudless and fairly steady but with only average transparency. After learning a brief history of Stargate the scouts viewed Mars, Uranus and several double stars including Albireo. They discussed globular clusters vs. open clusters and then viewed M36, M37 and M38. They group stayed late enough to view M42 as it was just above the trees in the east. Everyone enjoyed that view and a few of the adults gasped at first sight. They were very appreciative and all the adults took time to extend their personal thanks for our efforts.*

The group was reminded several times that they are welcome at our open-houses on the 4th Saturday of each month and that they are welcome to bring friends and family.

Diane Hall and Jonathan Kade arrived just after the Scouts left. The remaining members enjoyed the clear skies and the opportunity to view comet 46p in the Big Dob and the K2 Refractor. The Observatory was closed at 11:00 PM.

Upcoming Events:

1/20/19: *Need Volunteers!*

We have two events to celebrate the lunar eclipse this month. At **Stargate** we will be hosting Girl Scout Troop 76886, a troop of sixteen Scouts ranging in age from five to fifteen years old. We want to make this a special night for the girls but because of the intense interest in the eclipse, we are opening up the event to the wider public. Please check Meetup for details.

Cranbrook Institute of Science will also be hosting an event, and would like our assistance with viewing. They are also looking for eclipse-related presentations from seasoned presenters. Please stay tuned to Meetup and the W.A.S. mailing list for details and contact outreach@warrenastro.org if interested in presenting.

1/25/19: *Need Volunteers!* Cranbrook Institute of Science is hosting another Astronomy Overnight with both Cub Scouts and Girl Scouts. They will need some volunteers from 6 PM to 9 PM. All equipment will be provided.

2/8/19: *Need Volunteers!* Another Tiger Cub Sky is the Limit event at Cranbrook from 6 PM to 8 PM. Expect to be showing small children objects through Cranbrook's house telescopes. Two volunteers is ideal for this event and no outside equipment is necessary.

It's been a fun and very successful year for W.A.S. Outreach events and incoming Outreach Chair Bob Trembley has a lot of great things in store for us. Clear skies in 2019!

-Diane Hall
Outreach Chair, 2018

The W.A.S. Library



Come visit the breathtaking WAS library, located in the scenic rendering-server room at Cranbrook Institute of Science! In our library, you'll find six shelves of books about:

- Observing every celestial object imaginable;
 - Using and making telescopes;
 - Popular and unpopular science;
 - Science biography, science history, science fiction;
 - Archives of our fifty-year history;
- ...and other stuff we can't classify.

To check out a book, you simply have to be a member in good standing. At Cranbrook, see our librarian, Jonathan Kade, at the break. To have a book delivered to Macomb, simply request a book from the library list from Jonathan. Where do you see the list? It doesn't exist yet! Hassle Jonathan to post it.

Meeting Minutes

BOARD MEETING – December 3rd

Members present; Jeff MacLeod, Ruth Huellmantel, Diane Hall, Jonathan Kade, Brian Theme, Joe Tocco, Dale Thieme, Bob Trembley, Mark Jakubisin, David Baranski, Parker Huellmantel, Ken Bertin, Dale Partin, and Jerry Voorheis.

The meeting was called to order by Jeff MacLeod at: 6:32 PM

Officer's reports

President Jeff MacLeod reported he was running on fumes.

Joe Tocco gave the 2nd Vice President's report.

Ruth Huellmantel gave the Treasurer's Report.

Secretary – Jerry Voorheis reported that the minutes are in the WASP.

Outreach – Diane Hall reviewed upcoming events.

Publications – Jeff MacLeod reported that the latest WASP is published.

Old Business

Banquet preparations were discussed. Board members should arrive at 5:00 PM.

New Business

We need to pay Macomb Community College money for WAS scholarships.

A motion was made by Jonathan Kade to spend \$500.00 for the Paul Strong Scholarship. 2nd by Diane Hall. The motion passed.

Jonathan Kade proposed that we prepare a Google spread sheet of snack volunteers. 2nd by Joe Tocco. The motion passed.

Ruth Huellmantel asked for improvements to the WAS membership form.

Transfer of bank account signature cards was planned for.

The meeting adjourned at: 7:22 PM

CRANBROOK MEETING – December 3rd

Meeting called to order at 7:30 PM by Jeff MacLeod, President.

Roll call.

49 persons were present.

Ken Bertin presented In the News and In the Sky

Jeff MacLeod gave the President's Report - He announced that the WAS calendars are in and that banquet tickets are for sale.

Jonathan Kade gave the 1st Vice President's report. He announced the upcoming speakers and openings for speakers.

Joe Tocco gave the 2nd Vice President's report. The last Open House was not a good night for observing. The next Open House will be on the 22nd with a full moon.

Ruth Huellmantel gave the Treasurer's report. 143 paid members.

The Secretary's report is in the WASP.

Diane Hall gave the Outreach report.

Brian Theme reported that the WASP is published.

The Discussion Group will be hosted by Anita Mayls in Bloomfield Hills.

The Short Presentation was given by Jonathan Kade - "Good Telescopes under \$500"

Snack/Break Time.

(Continued on page 19)

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.

(Continued from page 18)

The Long Presentation was given by Dr. Dale Partin - "Measuring the Speed of Light Using Jupiter and Io"

Meeting was adjourned at 9:59 PM.

Annual WAS Banquet – December 6th

Jeff MacLeod apologized for the bad parking situation.

Jim Shedlowsky entertained the WAS with his singing and guitar playing presentation.

Doug Bock was presented the Bob Watt Award.

Brenda Walker was presented the Blaine McCullough Award.

Gary Ross was presented the Larry Kalinowski Award.

Diane Hall was presented the E. John Searles Award.

Jerry Voorheis
Secretary

Treasurer's Report

Treasurer's Report for 12/31/2018

MEMBERSHIP

We currently have 145 members, of which 44 are family memberships.

INCOME AND EXPENDITURES (SUMMARY)

We took in \$1317.53 and spent/transferred \$2,361.14. We have \$20,930.04 in the bank and \$223.34 in cash, totaling \$21,153.38 as of 12/31/2018.

INCOME

300.62	Memberships/renewals
29.80	Astronomical League
35.00	Snacks
712.42	Annual Banquet
209.19	Calendars
5.50	General Fund
25.00	Paul Strong Scholarship

EXPENSES

645.80	Reimbursement to Jonathan Kade for calendar printing
25.00	Snacks
13.65	Supplies
1676.69	Banquet costs

Ruth Huellmantel
Treasurer, 2018

GLAAC REPORT 12/31/2018

Beginning Balance: \$4,931.52

INCOME

No activity

EXPENSES

David D'Onofrio 480.18 (Reimbursement for sound system)

Ending Balance: \$4,451.34

Astronomical Events for January 2019

Add one hour for Daylight Savings Time
Source:

<http://www.astropixels.com/ephemeris/astrocal/astrocal2019est.html>

Day	EST (h:m)	Event
01	16:50	Venus 1.3°S of Moon
02	00	Saturn in Conjunction with Sun
03	00	Earth at Perihelion: 0.98330 AU
03	02:37	Jupiter 3.1°S of Moon
03	21	Quadrantid Meteor Shower
05	20:28	NEW MOON
05	20:41	Partial Solar Eclipse; mag=0.715
06	00	Venus at Greatest Elong: 47.0°W
06	19:08	Moon at Descending Node
08	23:29	Moon at Apogee: 406116 km
12	03	Mercury at Aphelion
12	14:47	Mars 5.3°N of Moon
14	01:45	FIRST QUARTER MOON
17	13:20	Aldebaran 1.6°S of Moon
20	17:48	Moon at Ascending Node
21	00:12	Total Lunar Eclipse; mag=1.195
21	00:16	FULL MOON
21	10:32	Beehive 0.6°N of Moon
21	14:58	Moon at Perigee: 357345 km
22	20:41	Regulus 2.5°S of Moon
27	16:10	LAST QUARTER MOON
29	22	Mercury at Superior Conjunction
30	18:54	Jupiter 2.8°S of Moon
31	12:36	Venus 0.1°S of Moon: Occn.

The Warren Astronomical Society is a Proud Member of the Great Lakes Association of Astronomy Clubs (GLAAC)

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.

GLAAC Club and Society Meeting Times

Club Name & 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
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

GLAAC Club and Society Newsletters

Warren Astronomical Society:
Oakland Astronomy Club:
Ford Amateur Astronomy Club:
Sunset Astronomical Society:
University Lowbrow Astronomers:

<http://www.warrenastro.org/was/newsletter/>
<http://oaklandastronomy.net/newsletters/oacnews.html>
<http://www.fordastronomyclub.com/starstuff/index.html>
<http://www.sunsetastronomicalsociety.com/>
<http://www.umich.edu/~lowbrows/reflections/>

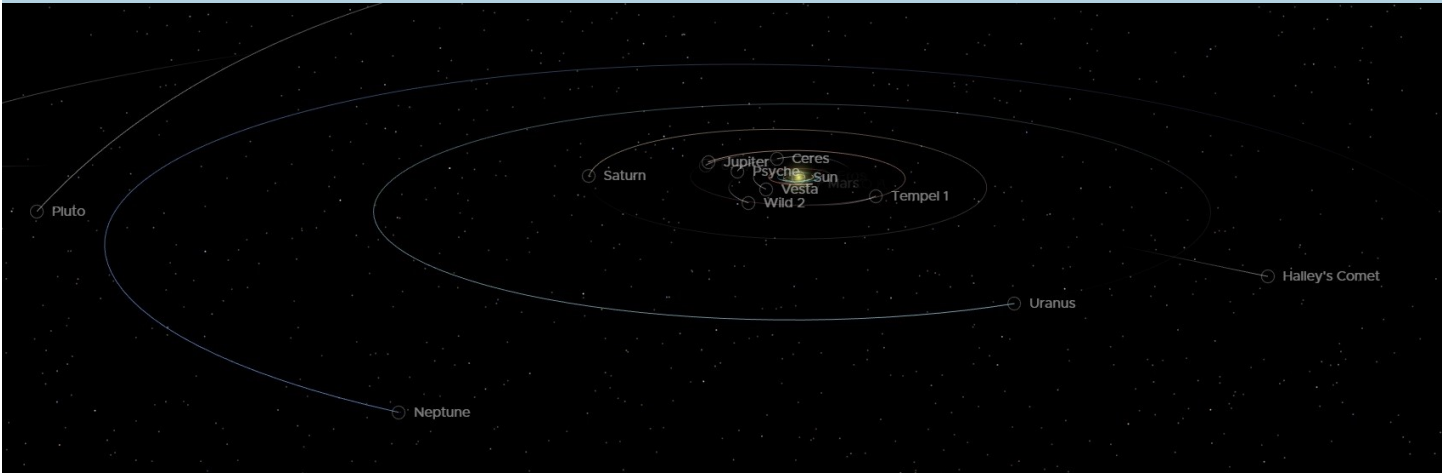
WAS Member Websites

Jon Blum: MauiHawaii.org
Bob Trembley: Balrog's Lair
Bill Beers: Sirius Astro Products
Doug Bock <https://boonhill.org>

Jon Blum: Astronomy at JonRosie
Bob Trembley: Vatican Observatory Foundation Blog
Jeff MacLeod: A Life Of Entropy

NASA's New Web-Based Solar System Orrery

By Bob Trembley

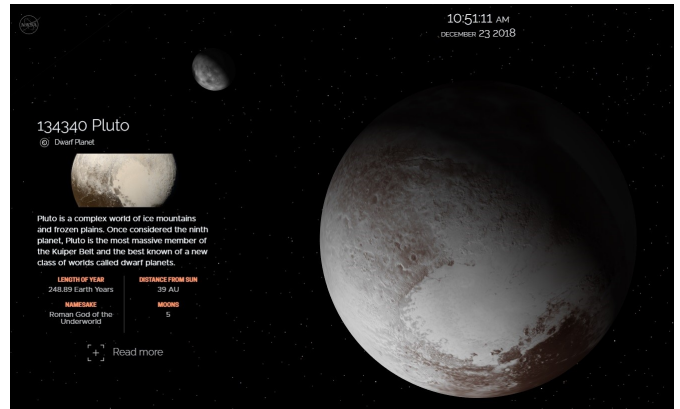


NASA has introduced a web-based [orrery](#) showing a real-time simulated view of our solar system, with planets, moons and spacecraft shown where they are right now. Go to solarsystem.nasa.gov and click on the solar system icon in the menu.



The orrery is a lightweight, mobile-friendly version of NASA's [Eyes on the Solar System](#) software.

"This snapshot of our solar system focuses on active NASA planetary science missions and select ESA missions. Showcasing the entire operating [NASA fleet](#) is too much of a data wallop at the moment (but we are working on it). International missions such as Japan's Akatsuki (orbiting Venus) and ESA's BepiColombo (en route to Mercury) are not yet available."



This article is from Bob's [blog](#) at the Vatican Observatory site. Image credits: Credit: NASA/JPL-Caltech.

