Happy New Year!

The transition from treasurer to publisher is proving interesting to say the least. As soon as I sit down to work on the WASP, I think of an entry that needed to go in the ledger. As I make the entry, I remember another item that needs to go in the WASP. Hopefully I’ll get it all sorted out.

Meanwhile, if you couldn’t attend the 2015 Annual Banquet, you missed out on a particularly good one, from the array of door prizes from both our members and commercial sources, to the service from the staff of DeCarlos, excellent as always, then the entertaining and challenging presentation from Connie Trembley and finally capped off with the award presentations. The recipients this year were: Dr. Richard Galia, the E. John Searles Award (sadly, posthumously); Mark Kedzior, the Bob Watt Award; Jim Shedlowsky, the Larry F. Kalinowski Award; and Ralph DeCew, the Blaine McCullough Award.

Once again, Gus Povirk provided music to entertain us while the attendees arrived (which I enjoyed while working the ticket table) and apparently Jeff MacLeod amused arriving guests with knife juggling, standing behind me (should I have been alarmed?). Phil Martin arrived in his Steam Punk regalia—I suspect he is hoping we institute an award for “best dressed”.

He’d get my vote.

-Dale Thieme
From the obituary:

In Memory of
Janice Joann Kalinowski

September 25, 1945 -
December 13, 2015

Janice Joann Kalinowski, age 70, a longtime resident of Roseville, passed away peacefully on December 13, 2015. Janice was proud of the work she did at Mark Twain Elementary School over the years.

She was the loving wife of the late Larry Kalinowski. Janice leaves behind her sons, Mark (Lauren) and Keith Kalinowski, grandchildren, Joseph "JD" and Brooke, siblings, Edith Stinson, Louise Black, Ver- 

ble Johnson, and John Collins, and many nieces and nephews; especially close to her were Eileen (Steve) Sovey, Debbie Frey, Tom Rist, and Cindy Brust. She dearly cared for her great-nephew, John William Sovey. Janice is pre-deceased by several of her siblings including Tina Gates and Earl Collins.

Donations may be made to either the Leukemia & Lymphoma Society (www.lls.org) or the National Kidney Foundation (www.kidney.org).

From our members:

Jonathan and I visited the Kalinowski house after Larry's death and Joann was phenomenally kind to us. There we were, still relative newbies to the W.A.S., and she welcomed us in, showed us around, and pressed upon us box after box of astronomy supplies, W.A.S. memorabilia, and even personal mementos. I felt like a mere footnote in the saga of Larry's five decades in the club but Joann was as warm to us as if we'd been a part of the "family" for years.

Diane Hall

Working on the scans of the old copies of the WASP (donated to the club by Joann Kalinowski), gave me a deep appreciation of the Kalinowski's contributions. When I heard the request that the club needed someone to print out and send a copy of the WASP to Joann, I volunteered and until this past month, sent her a copy every month as a way of saying thanks. I, for one, extend my condolences and thanks to the Kalinowski family for their support and contributions to the Warren Astronomical Society.

Dale Thieme

I met Mrs. Kalinowski in either 1967 or '68 at the Detroit home of John F. and Helen Szymanski. When Jack and Larry met at Belle Isle in 1965, also the year Jack got married, they "hit it off" straightaway and in short order the Szymanski house became a "Cheers" scene for Larry and Joann.

It was only in the week of the funeral I learnt she was my age! Going really far back, now, it always seemed she was an Older Woman given her demeanour: a dignity, a reserve. Given we were contemporaries, I would have expected more of a ding-bat, but her growing up family circumstances possibly truncated Joann's youth, or maybe one hopes it was basic neu- rology. The years that followed at the Szymanski tavern became "the days of wine and roses", i.e. the Boys getting seriously drunk. My memories of that era -- such as they are -- were of the women usually up-stairs in the kitchen, Helen amused without too much contempt, Joann stately, cigarette in hand. The other femmes made a wholesome tableau. Joann, to the best of memory, never ventured into Hades, also known as the basement.

Looking through the photo-album at the funeral, I reflected upon how she actually looked good in a "beehive" . . .

G. M. Ross
Astronomy presentations and lectures twice each month at **7:30 PM:**

**First Monday** at Cranbrook Institute of Science.
**Third Thursday** at Macomb Community College - South Campus Building J (Library)

**Snack Volunteer Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Volunteer</th>
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<tbody>
<tr>
<td>Jan. 4</td>
<td>Cranbrook</td>
<td>Gary Ross</td>
</tr>
<tr>
<td>Jan. 21</td>
<td>Macomb</td>
<td>Mark Kedzior</td>
</tr>
<tr>
<td>Feb. 1</td>
<td>Cranbrook</td>
<td>Joe Tocco</td>
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<tr>
<td>Feb. 18</td>
<td>Macomb</td>
<td>Gerald Voorheis</td>
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<td>Mar. 7</td>
<td>Cranbrook</td>
<td>Glenn Wilkins</td>
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<td>Mar. 17</td>
<td>Macomb</td>
<td>John Horton</td>
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<tr>
<td>Apr. 4</td>
<td>Cranbrook</td>
<td>Jonathan Kade &amp;</td>
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<td></td>
<td></td>
<td>Diane Hall</td>
</tr>
<tr>
<td>Apr. 21</td>
<td>Macomb</td>
<td>Dale Partin</td>
</tr>
</tbody>
</table>

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**

**Grab some snacks, come on over, and talk**

The WAS Discussion Group meetings take place at the home of Gary and Patty Gathen, from 8 -11 PM, on the fourth Thursday of the month, from January-October. Different dates are scheduled for November and December due to the holidays. The Gathens live at **21 Elm Park Blvd, in Pleasant Ridge**—three blocks south of I-696, about half a block west of Woodward Ave.

The agenda is *generally* centered around discussions of science and astronomy topics. Soft drinks are provided, snacks are contributed by attendees. Anywhere from 4 to 16 members and guests typically attend. Gary can be reached at (248) 543-5400, and gary@gathen.net.

**Saw a Fireball?**

**Report it to the American Meteor Society!**


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I've been an amateur astronomer since the age of three or so, when my grandfather took me out on the driveway of our suburban California home and taught me the constellation Cassiopeia. I remember what caught my interest then—the stories behind the star-pictures, the myths of Perseus and Andromeda, of Orion the Hunter and the giant scorpion, of the trickster crow hurled into the sky by the god Apollo. My mother bought me decks of flashcards, each card containing a proper constellation map on one half and an artist’s conception of the image each star-pattern was meant to evoke on the other. Some of the pictures, like Ursa Minor’s toy bear, were cute and others, like Andromeda chained to her rock, were more than a little disturbing, but children learn do lessons through the grotesque, as in fables and fairytales. I learned that Andromeda the constellation contained a large galaxy, represented on the map by a green oval, through studying that picture of a beautiful maiden in chains. Once I knew the green oval was a galaxy, I looked though the other cards to see what other constellations had galaxies, forming connections and making patterns in my own mind.

Astronomy captured me in part because it was terrifying. I couldn’t tie my own shoes yet and I would stay up reading of the future death of the sun by the glow of my night-light. I thought a lot about aliens on these other worlds that might have two, three, even six suns in their sky. I thought about the moons of Jupiter, Saturn, and Uranus, which the Voyager probes were exploring. The solar system was a crazy enough place to contain Io’s sulfur volcanos and Miranda’s fractured jumble of grooves and scarps. Our small, fragile, and ultimately doomed world was such a nice place compared with everything else out there.

I must report I was ensnared not by the sight of any one thing in a telescope (Saturn underwhelmed me) but by everything my imagination showed me. I remember Halley’s Comet not because of its unimpressive showing but because of the little green plastic telescope that I got from a fast-food kiddie meal to celebrate the occasion, because I learned that Mark Twain’s life was bookended by visits from the comet, because I would be in my eighty-first year the next time the comet came around. I vowed to be around for 2061.

I was enchanted by the fact that hot stars were blue and cool ones red, the opposite of the colors on the tap in the bathroom sink. I studied the Hertzsprung-Russell diagram because it was a way of sorting stars the way I sorted the marbles in my marble jar, by size and color. I pretended the brightest stars had personalities and I scribbled nonsensical little stories about them in the little notebook my mother gave me to take field observations.

Of course, I wanted to be an astronaut when I grew up. My mother bought me “moon boots” to stomp around in and pajamas that looked like a flight suit. I ate freeze-dried ice cream and pretended I was in training. Sally Ride and Judy Resnik were my heroines. Then Challenger happened and I decided I didn’t want to be an astronaut after all. Astronaut Barbie got pitched into the bottom of the toy box.

By now you may have noticed I was a strange child. My grandmother was certainly perplexed at how to deal with a preschooler who was afraid not of a monster in the closet but of the sun going red giant and the earth being turned to a cinder. I tell you this not so you can learn in detail how weird your new president is, but to demonstrate how very many facets of education it took to get me into astronomy and to keep me passionate long after I knew I was never going to be flying the Space Shuttle. Astronomy was science but it also was poetry and myth, cartoons and statues, hope and fear and wonder. It took both
fact and fancy to keep me an astronomer long after I abandoned the idea of being an astronaut. It took cheap plastic toys and bad sci-fi movies along with beautiful space photos and sidewalk stargazing sessions. It also required adults who were willing to take a child’s latest obsession (alongside the dinosaur phase, the airplane phase, the model ship phase, the tadpole-collecting phase) and both indulge it and guide it, even if it wasn’t necessarily part of a grand plan to get me into the right schools in preparation for the right job.

(And no, not one of them ever said that a little girl shouldn’t be interested in the things I enjoyed. Sadly this is still a relevant point.)

As an organization, we can bring the kids to the telescopes, or the telescopes to the kids. Instilling a lifelong love of science in the young people we reach out to may take a lot more, may well take tools we’d normally reject, like cheesy “kids in space” movies and the world’s worst toy telescope. It may take giving children books that are “too old” for them and exposing them to concepts that will scare the pants off them. I’m glad I was given leeway to explore the known universe before the training wheels were off my bicycle. The first step of that journey was looking up from the driveway, listening to my grandfather say “Cassiope” in his East Coast Italian accent, and beginning to wonder.

Diane Hall, President

Over the Moon

Richard Hill, past WAS member (and served on the board), is our society’s contribution to professional astronomy. We’re proud of the work he does with the Catalina Sky Survey, and getting various asteroids named for WAS members. Rik also posts frequently to the Lunar Study Group on Facebook and graciously allowed publication of his posts here. And now a word from Rik:

I’m working just short of the 0.56 sec. limit of the aperture. To do that you have to, of course, have decent seeing (transparency is secondary) and a sensitive camera that is Niquist sampling the focal plane. With the f/20 prime focus for this Mak-Cass system and the 3.7 micron pixels in the camera, I am doing just that. Speed is also important. To freeze seeing 1/1000 sec. is the goal.

Just to the immediate upper left from Theophilus are two craters aligned N>S. The upper one is Zollner F and the lower Kant C. Between them is a curious broken line of secondary craters. Just to the left of this line is a pretty little arc of craterlets, open to the right, that is not on Rukl nor Virtual Moon Atlas but is very well shown in the LROC images. The craters here are 2-3 km in size. This image resolves a little better than that, say 1.5 km, but that’s about it. I have gotten to 1 km but that’s with 9/10 seeing at perigee. (Yes, at these resolutions perigee/apogee matter.)

-Rik Hill
**Object of the month**

*By Chuck Dezelah*

**NGC 2683** is an edge-on spiral galaxy in the constellation Lynx. Due to the small angle at which its equator lies relative to our vantage point, the object has earned its distinctive nickname: The UFO Galaxy. This galaxy is fairly bright and highly elongated, having an integrated apparent magnitude of 9.8 and angular dimensions of 8.8' x 2.5'. It is classified as Sb on the Hubble Sequence, indicating that it has a spiral structure, although this is obscured from view from the perspective of the observer. As might be expected, the galaxy has a well-defined saucer-like shape with a conspicuous central bulge, which is both attractive and intriguing.

NGC 2683 requires some effort to locate without the aid of electronic guidance. It is positioned about 4.5 degrees north of Iota Cancri (ι Cnc, mag. 4.0) and about 6 degrees west of Alpha Lyncis (α Lyn, mag. 3.1), which are the closest two stars readily visible to the naked eye from common observing sites. As a result, it is a rather tedious star-hop to arrive at the galaxy’s position. Once in the eyepiece, the UFO Galaxy provides an impressive view, especially in 8-inch or larger telescopes. At low magnification, the overall shape and bright extended core region should be easily discerned. Higher magnification can reveal subtle contrast variations and perhaps some hints of a dust lane. Large aperture telescopes or unusually favorable conditions can uncover considerable detail, including a significant dust lane that extends for about half the length of the object as well as elements of fine structure throughout, in particular a mottled appearance around the periphery can be detected.

This column is a recurring feature written with the intention of introducing a new object each month that is visible from Stargate Observatory using a moderate-sized telescope typical of beginner and intermediate level amateur astronomers. In particular, special focus will be given to objects that are not among the common objects with which most observers are already familiar, but instead articles will mainly give attention to “hidden gems” or underappreciated attributes of the night sky.
We especially want to thank the sponsors of the Door Prize table: The Cranbrook Institute of Science, Orion Telescopes and Binoculars, Telescope Support Systems, Celestron, Kalmbach Publishing Co. (Astronomy Magazine), Agena Astro Products, Sirius Astro Products, Explore Scientific, National Coney Island, Sky & Telescope, and the Astronomical Society of the Pacific, along with the generous contributions of our own members.
A time honored tradition: Group photo of all past presidents (with a twist—included is the president-elect).

From left to right:
Riyad Matti, Stephen Greene, Ken Bertin, Marty Kunz, Diane Hall, Dave Harrington, Jonathan Kade, and Doug Bock.

Not to be outdone, the treasurers, past and future, lined up for their moment of glory. Left to right: Dale Partin, Stephen Greene, Dale Thieme, Phil Martin, Jim Shedlowsky, Marty Kunz, Bill Beers, Robin Bock, Jonathan Kade, Mike O’Dowd and Joe Tocco (visiting from the future).
The Warren Astronomical Society’s 2015 Awards

E. John Searles Award  Dr. Richard Gala Accepted by Leslie Gala

The Searles award is in part about making the Society a major part of your life, and for over a decade Dick Gala made us an important part of his. If you didn’t know Dick Gala, you’ve never been to a W.A.S. meeting. From his Joisey accent to his curly white hair to his endless curiosity to his untiring willingness to do the unglamorous work, he was utterly unmistakable. On his own initiative, he mailed out five to fifteen announcements to WAS members per month for more than a decade. Do you know what a miserable, thankless job that gets to be? He never complained about it. He took it as seriously as a paying job. More seriously than many people take their paying jobs.

His unsentimental stories of growing up will always stick with me, as will his “conversion story” of, well into his hard-working high-flying medical career, discovering that he had curiosities and intellectual needs outside of just work. He filled many of those needs with astronomy, and turned his considerable teaching ability developed in years of university medical work towards teaching old and young alike. He recruited more members than anybody I can think of.

That’s not the only way Dick turned his career towards our Society. When one of our members developed a non-malignant but still life-threatening brain tumor, but had no medical insurance or full-time caregiver, Dick voluntarily took charge of Brian Klaus’s medical care and got him through literal brain surgery at Wayne State. I think it’s entirely thanks to Ken Bertin and Dick that Brian is still with us today.

Bob Watt Award  Mark Kedzior

Mark Kedzior, a very long-term member of the WAS, is a busy man. In addition to his work at the Postal Service, he makes telescopes. Not only does he make telescopes, but he has worked really hard this year at getting them into the hands of the public, by kick starting a lending program at Grosse Pointe Public Schools. Along with Diane, Dale Thieme, and Joe Tocco, they made nine Orion StarBlast telescopes into lending devices.

This isn’t the greatest honor he’s received – Lincoln High School, where the WAS was born, has named its Career and Technology Center after him in honor of decades of service on the Van Dyke Board of Education.

Larry F. Kalinowski Award  Jim Shedlowsky

Jim Shedlowsky for the Larry F. Kalinowski award. From his board positions to his lectures to his musical performances gracing us several times a year, it’s hard to imagine a W.A.S. without Jim. He really is a rock star.

Blaine McCullough Award  Ralph DeCew Accepted by Jeff MacLeod

Ralph DeCew for the Blaine McCullough award. Ralph has jumped into outreach with gusto and is one of the club’s rising astrophotographic stars. He’s jumping onto the board next year as the first vice-president!

~Jonathan Kade
January 4, 2016 Cranbrook Meeting Presentations

The Warren Astronomical Society will have two speakers at Cranbrook on Monday, January 4th.

A full length presentation will be given by Gary Ross, entitled, “When Otto Struve was Sky and Telescope’s Brain Trust”. Over fifty years ago Sky and Telescope was the premier astronomy magazine in the western hemisphere, not only for amateurs but also for general reading by professional scientists. Otto Struve cut a considerable figure in its pages. He was the last in a long line of German-Russian astronomers, dying in 1963, with years of potential writing left unfulfilled as contributor to the journal. Struve was not the Sagan nor Tyson of the nineteen fifties and ’sixties, and never could have been. He was a foreign scholar, not telegenic, and writing in an age when televised science reporting / special programming was in its proverbial infancy or did not exist at all. This lecture will not be a biography. Struve’s "Skytel" articles will be reviewed taxonomically, with commentary on how such science writing could not today be what it is in North America’s two principal astronomy periodicals without him.

Gary has been a supporter of our society since its early years and served both as First Vice President and President. He has contributed to many lively discussion group sessions. Perhaps most importantly, Gary has long been an outspoken advocate of small telescopes, stressing that one does not need a large aperture to do useful astronomy. Armed with a 50 millimeter refractor and a well-thumbed copy of the Royal Astronomical Society of Canada’s Observing Handbook, he is one of the foremost visual observers in Michigan. Gary displays the best of the Warren Astronomical Society’s can-do spirit at the eyepiece. The accompanying picture shows (left to right) Gary Ross, Jack Szymanski and Larry Kalinowski in 2005.

Joe Tocco will give the short presentation entitled "Four Hundred Dollar Free Telescope". What started as a frugal way to resurrect an old 6 inch reflector turned into ATM nirvana. Just like astrophotography, building your own telescope is a slippery slope.

Joseph has been an active member of the Warren Astronomical Society since the summer of 2011 and is also an active member of the Seven Ponds Astronomy Club. As a young teen he was also an active member of the Warren club and remembers the mentoring that he received from many past club members. He enjoys the opportunities to repay that kindness now. Joseph is the Service Manager for a Systems Integration company where he has worked for the past 26 years, prior to that he served proudly in the US Coast Guard as an Avionics Technician. He just completed two years on the Board as Observatory Chairman and is now the Treasurer. Joseph resides in Waterford.
At our Macomb meeting on Thursday, January 21st, Dave Bailey will be our speaker. His topic will be, “Radiation on Young Earth-Like Planets”. Cosmic rays, carbon 14, radioactivity, sunburn, sunscreen, photosynthesis, vision, potassium 40, and programmed death will be discussed.

Dave is well-known in this organization for giving challenging and sometimes perplexing presentations with some physics content. This is a major activity of his - some might even wonder if it borders on an addiction! Dave says that he was into astronomy before he was born; his parents met as graduate students at the Yerkes Observatory in the 1930s. He also studied under Carl Sagan and other leading astronomers at Harvard.

W.A.S. Astrophotography

NGC 7635 Bubble Nebula
by Bill Beers 12/4/15
11" SCT f/6.3, QHY8L, 17 x 15 min.

Photo credit: Bill Beers
JANUARY 2016

Notable Sky Happenings

Jan. 1 - 7
Earth is at perihelion (its closest to the Sun for the year) on the 2nd. The Moon is to the right of Mars in the ESE pre-dawn sky on the 3rd. The Quadrantid meteor shower peaks before dawn on the 3rd and 4th.

Jan. 8 - 14
Venus is to the left of Saturn in the SE pre-dawn sky on the 9th.

Jan. 15 - 21
The Moon will occult (pass in front of) the star Aldebaran from 9:11pm to 10:27pm on the 19th.

Jan. 22 - 31
The Moon rises below Jupiter in the E before midnight the evening of the 27th and is above Spica in the SW pre-dawn sky on the 30th.

Now Showing
“From Earth to the Universe”
The night sky, both beautiful and mysterious, has been the subject of awe for as long as there have been people. Yet only recently have we truly begun to grasp our place in the vast cosmos. To learn about this journey of celestial discovery, from the theories of the ancient Greek astronomers to today’s grandest telescopes, we invite you to experience “From Earth to the Universe.”

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
Observatory Viewing every Friday & Saturday evening at 7:30 pm-10:00 pm

Solar Observing every First Sunday of the Month: 12:30 pm-3:00 pm

Acheson Planetarium Shows:

<table>
<thead>
<tr>
<th>Date</th>
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<tr>
<td>Saturday</td>
<td>One World, One Sky: Big Bird’s Adventure</td>
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<td>11:30am</td>
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<tr>
<td>Saturday/Sunday</td>
<td>From Earth to the Universe</td>
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<tr>
<td>12:30pm</td>
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<tr>
<td>Saturday/Sunday</td>
<td>Michigan Sky Tonight</td>
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<td>1:30pm</td>
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<tr>
<td>Saturday/Sunday</td>
<td>Young Stargazers Sky Journey</td>
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<td>2:30pm</td>
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<tr>
<td>Saturday</td>
<td>Michigan Sky Tonight</td>
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<tr>
<td>3:30pm</td>
<td>Ages 6 &amp; Above Only</td>
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<tr>
<td>First Friday Only</td>
<td>Michigan Sky Tonight</td>
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<td>6:00pm</td>
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<tr>
<td>Friday/Saturday</td>
<td>From Earth to the Universe</td>
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<td>Friday/Saturday</td>
<td>Michigan Sky Tonight</td>
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<td>8:00pm</td>
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<tr>
<td>Friday/Saturday</td>
<td>SpacePark360</td>
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This schedule is valid January 8 - July 3, 2016.
Getting into orbit is a bit more complicated than just throwing a rocket at the sky. Here’s the process modeled in Kerbal Space Program:

- Bob Trembley

Launch—Throttle up, stability control on, liftoff!

Gravity Turn—A fuel-saving maneuver that adds horizontal velocity: start by pitching 10° East after you reach 100 m/s.

Throttle Back—Throttle back at 300 m/s while in the thick lower atmosphere.

Throttle Up—Resume full throttle at 10 km, where the atmosphere is thinner.

Stage—After solid fuel boosters, and lower stages run out of propellant, they are discarded.

Get Apoapsis Above the Atmosphere—Continue slowly turning East and accelerating until your apoapsis is at the desired height.

Cut Engines—Enjoy the view as you coast upwards towards your apoapsis.

Orient Vessel Prograde—As you approach your apoapsis, orient your vessel towards prograde (the direction you are travelling).

Get Periapsis Above Atmosphere—About 30 seconds before reaching apoapsis, burn at full throttle, raising the periapsis above the atmosphere.

Circularize Orbit—When the orbit is circular, the apoapsis and periapsis will flip.

Deploy Solar Panels—Don’t forget to do this… just don’t.
Stargate Observatory

Monthly Free Astronomy Open House and Star Party

4th Saturday of every month!

Jan. 23, Feb. 27, Mar. 26

Wolcott Mill Metropark
Camp Rotary entrance
(off 29-mile road, just east of Wolcott Rd.)

- 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:

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.
The regular Open-house was held on Saturday the 26th the day after the full moon and the day after Christmas day. Sunset was at 5:03 PM and Astronomical Twilight ended at 6:45. Stargate was opened at 4:30 PM.

The night started with mostly cloudy conditions and became mostly cloudier by the time the two visitors left around 7:30 PM. There were also four club members. Riyad Matti and Jeff MacLeod answered question after question that were posed by the guests.

**January Open-house:**

The regular Open-house is scheduled for Saturday the 23rd the day of the full moon. Sunset is at 5:31 PM and Astronomical Twilight ends at 7:10 PM.

Arrive just before sunset (or sooner if you plan to set up a scope.)

While not critical during a full moon it is still courteous to dim your headlights upon entry to the park, also no white light flashlights at all.

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 preferably with your vehicle lights pointed away from the observatory and other telescopes.

**Observatory Update:**

Jeff MacLeod is taking over as Observatory Manager in 2016. Having spent much time with Jeff at Stargate I know that the Observatory will be well maintained over the coming year. I enjoyed my tenure as the Observatory Manager and want to extend many thanks those who helped me make the open-houses and events at Stargate successful. Mostly, I want to express my sincere appreciation for Riyad Matti’s unwavering support and guidance.

Joe Tocco - 2nd VP, Stargate Observatory Chairman (outgoing)

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**For Sale**

*Dale Mayotte* is selling an 11" Celestron CPC, JMI mobile case, HD Pro wedge, an array of 1.25 EPs with carrying case 12.5 mm illuminated reticle ep, and 1.25 diagonal, Celestron 2" EP set and diagonal with case, ADM rails and counter-weight setup, 9x50 finderscope, full aperture solar filter, Williams Optics Digital focuser, 11" dew heater. 5mm Baader Hyperion ep and 13mm Baader Hyperion ep which can be used as either 1.25" or 2"

The dew controller died, so that is the only thing unavailable for it.

Dale is asking $3200 OBO for everything! Contact him Through Facebook, via the link above.
W.A.S. Outreach

It is with no small amount of trepidation that I now dive-into the role of the WAS’ Outreach Coordinator. Diane has provided me with a spreadsheet containing a BOATLOAD of outreach events the WAS performed in 2015. I am simply amazed at how active our volunteers have been, and how much the WAS offers to the Metro Detroit area. One of my goals this year is to make more science teachers and their students aware of the WAS, and our Stargate open houses.

For the month of December, WAS members gave a couple presentations, and assisted Cranbrook Institute of Science with a multi-day event at the end of the month. Observing was thwarted at every turn by the dreaded “Michigan Nebula.”

Dec. 9: North Hill Elementary, Rochester. Joe Tocco, Bob Berta, and Jeff MacLeod presented to fifteen students and a dozen adults, and managed a little observing under poor conditions.

Dec. 17: Diane Hall and Jeff MacLeod worked with a Science Olympiad team from Atwood Elementary in Macomb. Jeff wowed the kids with laser demonstrations.

Dec. 26-30: W.A.S. members supported Cranbrook with their Night Life special programming, reaching hundreds of museum patrons over the course of the five-day event. The Michigan nebula prevented solar observing but members including Gary Ross, Diane Hall, Jonathan Kade, Jeff MacLeod, Dale Thieme, Parker Huellmantel, Ken Bertin, Ralph DeCew, and Bob Berta improvised to get the message out.

Thanks to everyone who worked to make 2015 an outreach success!

On the books for 2016 are:

Jan 30, Sat - 6-9 pm: Junior Girl Scouts Astronomy
Feb 5, Fri - 6-10 pm: Boy Scout Astronomy
Feb 15-19: Utica Community Schools Winter Camp
Mar. 18: Astronomy Night at Endeavour Middle School - Connie Trembley would like to have three 15 min presentations running simultaneously in three classrooms. Groups of students will rotate through each lecture over the course of an hour (so presentations will have to be given three times). After the presentations, Connie would like to have an observing session outside. Connie’s suggestions for presentations are:
  * The Sun (I call that one!)
  * The Solar System, and the scale of things.

June 19: 2016 Worldwide Solstice Fest - I’d like to plan a Solar Observing event at Stargate this Sunday.

Of Note:

Jan. 21-24: Life, the Universe, and ConFusion (an SF convention) – Bob Trembley will be presenting and observing.

Apr 29-May 1: Penguicon (a multi-genre convention: SF, Tech, Maker, Science) – Bob Trembley will be presenting and observing, and is encouraging WAS members to do the same. Submit lecture/panel ideas here: http://2016.penguicon.org/get-involved/present-an-event/

Bob Trembley, 2016 Outreach Coordinator
Diane Hall, 2015 Outreach Coordinator

Help us with Outreach! With the growing number of requests, we could always use your help!
Treasurer's Report

MEMBERSHIP
We currently have 138 members, of which 28 are family memberships.
We’ve added 33 new members.

INCOME AND EXPENDITURES (SUMMARY)
We took in $1636.47 and spent $1221.65. We have $17,636.25 in the bank and $204.33 in cash, totaling $17,772.42 as of 12/31/2015.

INCOME
491.04  Membership/renewal
313.41  Calendars
567.27  Annual Banquet
180.00  Door prize tickets
31.75   Snacks
28.00   Donations: Paul Strong Scholarship
25.00   Sales: Canopy to Joe Tocco

EXPENSES
20.51  Reimbursement: Dale Thieme-snacks
33.99  Reimbursement: Dale Thieme- paper cutter
68.16  Reimbursement: Jonathan Kade- printing costs
11.12  supplies: Door prize tickets
50.00  Thank you gift for Pianist
15.00  Refund
136.00  Awards
40.00  Engraving (Honor Roll board)
846.87  Annual Banquet
$12,917.05  Total donated to date for The Stargate Fund
$6622.66  remaining
$345.69  Donated to the Paul Strong scholarship to date

Dale Thieme, Erstwhile Treasurer
31 December 2015

We have our PayPal account all set up now. We can receive donations two ways through this avenue: Those with PayPal accounts can authorize payments to treasurer@warrenastro.org, we also have a card reader and can swipe credit cards onsite. Dale Thieme and Jonathan Kade have readers to help split the workload.

Meeting Minutes

WAS Board Meeting

December 7th, 2015

Board members present: Jonathan Kade, Diane Hall, Dale Partin, Joe Tocco, Dale Thieme, and Jeff Macleod.

President:
Jonathan did not have much to report, mostly new business to be discussed later. Jonathan then said how nice it was to have this board and how nice being president has been.

1st Vice President:
Dale Partin said that we are in good shape for speakers going into 2016. Jon Dumar has agreed to do some student presentation in the year to come.

2nd Vice President:
Joe Tocco told the board that the November Open house was ran by Riyad, the night started cloudy and didn’t get much better, closing at 10:30. The December open house is scheduled for the Saturday after Christmas.

Treasurer:
Dale Thieme notified the board that we currently have 136 members, 36 members attending the banquet so far, 26 calendars sold and that the rest of his report would be in the WASP.

Secretary:
Minutes from last month’s board meeting will be in the latest issue of the WASP. Continued on next page
Outreach:

Diane informed the board that Noel Night was clouded out, Joe Tocco and Jeff M will assist North Hill elementary this Wednesday, Diane is also looking for assistance in a laser tour of the sky for a science Olympiad program at Atwood elementary. Then after Christmas Cranbrook will be hosting an event and are looking for volunteers. More info on upcoming and past outreach events can be found in the outreach officer report in the WASP. People looking to volunteering for upcoming outreach events please contact Diane at Outreach@warrenastro.org or check the outreach report in the WASP.

Publications:

The WASP should be out soon.

Old Business:

The board then went over old business. Eagle scout projects are on hold for the winter. Joe Tocco met with Susan from the Metroparks and she is redrafting a new agreement between the club and the Metroparks. Jonathan would like to see the big dob assembled before the next Stargate Openhouse. Timing for the banquet was finalized; one remaining thing will be to finish the banquet programs. Insurance coverage was updated with a new policy. Dale Partin withdrew the motion to drop the insurance (from previous board meeting) and Joe Tocco seconded, Dale Partin then set a motion to alter the insurance with Jonathans recommendations, and again Joe Tocco seconded and the motion passed unanimously.

New Business:

Jonathan Kate made a request for money, up to $300 for the creation of weather resistant bumper stickers for the WAS. Dale Thieme moved, Diane Hall seconded and the motion passed unanimously.

President:

Jonathan opened the meeting and introduced himself. Attendees announce their names, and then Jon-athan began officer reports. As president he informed the club that the banquet at DeCarlo’s is coming up on December 10th, Jonathan also added that 2016 calendars can be purchased for 15 dollars.

1st Vice President:

Dale announced that the next meeting, the banquet, Constance Trembley will be our speaker. One month from now, at the first Cranbrook meeting of 2016 Gary Ross will be presenting the long talk with Joe Tocco providing the short presentation. Dale then reminded members that many spots are still open for 2016.

2nd Vice President:

Joe informed the club that the open house for November was partly clouded, but around 20 people still attended, the last openhouse of the year is scheduled for the day after Christmas, December 26th.

### Astronomical Events for January 2016

<table>
<thead>
<tr>
<th>Date</th>
<th>EST (h:m)</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>02</td>
<td>00:30</td>
<td>LAST QUARTER MOON</td>
</tr>
<tr>
<td>02</td>
<td>06:53</td>
<td>Moon at Apogee: 404279 km</td>
</tr>
<tr>
<td>02</td>
<td>18</td>
<td>Earth at Perihelion: 0.98330 AU</td>
</tr>
<tr>
<td>02</td>
<td>22:35</td>
<td>Spica 4.7°S of Moon</td>
</tr>
<tr>
<td>03</td>
<td>13:45</td>
<td>Mars 1.5°S of Moon</td>
</tr>
<tr>
<td>04</td>
<td>03</td>
<td>Quadrantid Meteor Shower</td>
</tr>
<tr>
<td>06</td>
<td>18:57</td>
<td>Venus 3.1°S of Moon</td>
</tr>
<tr>
<td>06</td>
<td>23:57</td>
<td>Saturn 3.3°S of Moon</td>
</tr>
<tr>
<td>07</td>
<td>06:34</td>
<td>Venus 6.3°N of Antares</td>
</tr>
<tr>
<td>08</td>
<td>13</td>
<td>Mercury at Perihelion</td>
</tr>
<tr>
<td>09</td>
<td>20:30</td>
<td>NEW MOON</td>
</tr>
<tr>
<td>14</td>
<td>09</td>
<td>Mercury at Inferior Conjunction</td>
</tr>
<tr>
<td>14</td>
<td>10:48</td>
<td>Moon at Descending Node</td>
</tr>
<tr>
<td>14</td>
<td>21:10</td>
<td>Moon at Perigee: 369619 km</td>
</tr>
<tr>
<td>16</td>
<td>18:26</td>
<td>FIRST QUARTER MOON</td>
</tr>
<tr>
<td>19</td>
<td>21:16</td>
<td>Aldebaran 0.5°S of Moon</td>
</tr>
<tr>
<td>23</td>
<td>20:46</td>
<td>FULL MOON</td>
</tr>
<tr>
<td>26</td>
<td>00:10</td>
<td>Regulus 2.5°N of Moon</td>
</tr>
<tr>
<td>27</td>
<td>18:58</td>
<td>Moon at Ascending Node</td>
</tr>
<tr>
<td>27</td>
<td>20:14</td>
<td>Jupiter 1.4°N of Moon</td>
</tr>
<tr>
<td>30</td>
<td>04:10</td>
<td>Moon at Apogee: 404553 km</td>
</tr>
<tr>
<td>30</td>
<td>06:35</td>
<td>Spica 5.0°S of Moon</td>
</tr>
<tr>
<td>31</td>
<td>22:28</td>
<td>LAST QUARTER MOON</td>
</tr>
</tbody>
</table>

Continued from page 18
Continued from page 19

**Treasurer:**

The financial situation was reviewed in brief. Details can be found in the Treasurer's section in latest issue of the WASP. There is currently about $17k in the bank account and we have 136 memberships. Dale also reminded members that they can renew their memberships or purchase banquet ticket for $30, they will be $35 at the door.

**Secretary:**

The minutes from each WAS board meeting and general meeting will be published in each monthly issue of the WASP. Jeff also made a plea to club members for donations for the Christmas banquet.

**Outreach:**

Diane went over recent outreach events such as the outreach for the Macomb branch of SOAR, the Grosse Pointe Library Telescope program, the Noel Night at the Michigan Science Center was canceled due to weather. Diane then went into upcoming events, Joe Tocco, Bob Berta and Jeff M at North Hill elementary on the 9th, Jeff M & Diane Hall at Atwood elementary on the 17th, and Cranbrook's wonder of the night December 26-30th 1-4pm

**Publications:**

Jonathan informed the club that the WASP is almost done, and should be out before the banquet.

In the News: presented by Ken Bertin. His bi-weekly recap of astronomical stories covered such topics as tiny ultra-cool star, Blue origin soft lands rocket, mars to gain a ring system in the future, new image from curiosity, bumping into parallel universes, delay to next mars mission, faintest galaxy, new horizon image of Pluto.

In the Sky: Diane Hall presented in the sky, Geminids meteor shower is in progress, peaking December 13th and 14th. Comet Catalina at 6th MAG and near Venus.

Presentation (Short talk):

Jon Blum presented the short talk entitled, Dark Sky Meter App vs Sky Quality Meter.

Jon gave an overview of each of the products in question, then when discussed the comparison testing he did to each, at different location around the country. He then presented his finding and gave some additional personal advice on which product is best for you.

Presentation (Long talk):

Marty Kunz presented the long talk entitled, An Astronomical Year in Review.

In his presentation Marty showed images from NASA's image of the day gallery. Marty explained what we were looking at in each image, some interesting facts about each type of object that was shown. Marty covered just about every astronomical object out there in his talk, nebulae, distant galaxies, gravitational lenses, comet Catalina, gas bubbles, planets, moon, and the sun were all show in one form or another.

The meeting was ended at 9:45 pm.

**Banquet:**

At the 2015 banquet Constance Trembley was a keynote speaker, delivering an engaging, entertaining, & informative presentation on gaining and holding children's interest in science.

The award recipients for 2015 are as follows:

- E. John Searles Award to the late Dick Gala.
- Bob Watt Award to Mark Kedzior.
- Larry F. Kalinowski Award to Jim Shedlowsky.
- Blaine McCullough Award to Ralph DeCew.
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

<table>
<thead>
<tr>
<th>Club Name &amp; Website</th>
<th>City</th>
<th>Meeting Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astronomy Club at Eastern Michigan University</td>
<td>Ypsilanti/EMU</td>
<td>Every Thursday at 7:30PM in 402 Sherzer</td>
</tr>
<tr>
<td>Capital Area Astronomy Club</td>
<td>MSU/Abrams Planetarium</td>
<td>First Wednesday of each month 7:30 PM</td>
</tr>
<tr>
<td>Ford Amateur Astronomy Club</td>
<td>Dearborn</td>
<td>Fourth Thursday of every month (except November and December) at 5:30 PM</td>
</tr>
<tr>
<td>Oakland Astronomy Club</td>
<td>Rochester</td>
<td>Second Sunday of every month (except May)</td>
</tr>
<tr>
<td>Seven Ponds Astronomy Club</td>
<td>Dryden</td>
<td>Monthly: generally the Saturday closest to new Moon</td>
</tr>
<tr>
<td>Sunset Astronomical Society</td>
<td>Bay City/Delta College Planetarium</td>
<td>Second Friday of every month</td>
</tr>
<tr>
<td>University Lowbrow Astronomers</td>
<td>Ann Arbor</td>
<td>Third Friday of every month</td>
</tr>
<tr>
<td>Warren Astronomical Society</td>
<td>Bloomfield Hills/ Cranbrook &amp; Warren/MCC</td>
<td>First Monday &amp; third Thursday of every month 7:30 PM</td>
</tr>
</tbody>
</table>

GLAAC Club and Society Newsletters

Warren Astronomical Society: [http://www.warrenastro.org/was/newsletter/](http://www.warrenastro.org/was/newsletter/)
Oakland Astronomy Club: [http://oaklandastronomy.net/newsletters/oacnews.html](http://oaklandastronomy.net/newsletters/oacnews.html)
University Lowbrow Astronomers: [http://www.umich.edu/~lowbrows/reflections/](http://www.umich.edu/~lowbrows/reflections/)

WAS Member Websites

Jon Blum: [MauiHawaii.org](http://MauiHawaii.org)
Bob Trembley: [Vatican Observatory Foundation Blog](http://VaticanObservatoryFoundationBlog)
Bill Beers: [Sirius Astro Products](http://SiriusAstroProducts)
Jeff MacLeod: [A Life Of Entropy](http://ALifeOfEntropy)
Jon Blum: [Astronomy at JonRosie](http://AstronomyatJonRosie)
1. **Jan. 13 - Southfield’s Sky Dome: Look up! What can we see?** Let’s explore star patterns of the night sky (Constellations). Explore the Strange motions of the Moon and Planets against the night sky. Find our way by Star Hopping. How to use popular Apps, star maps and planispheres to find our way through the night sky.

2. **Jan. 20 - Exploring our Solar System (Part 1) Rocky Planets** We’ll compare the rocky inner planets, Mercury, Venus, Earth, Mars and Dwarf Planet, Ceres. Accomplishments of the rovers on Mars will be discussed.

3. **Jan. 27 - Exploring our Solar System (Part 2) Gas Giants** How do the gas giants differ from the rocky planets? Are they visible in our night sky? What’s the story behind Pluto’s demotion to dwarf status? Kuiper Belt and Oort Cloud, what are they?

4. **Feb. 3 - Our Sun and how it affects our Earth** Our Sun is a star. We’ll compare it to the 200 billion stars in our Milky Way galaxy. Is Earth closer to the Sun in the summer or winter? Seasons both on Earth and Mars will be compared. Eclipses will be explained with special notes on the August 21st, 2017 total eclipse across the United States.

5. **Feb. 10 - Guest: NASA/JPL Solar System Ambassador – Robert Trembley** Topic to be determined. Robert is a volunteer NASA/JPL speaker and is knowledgeable on all NASA/JPL. His special area of expertise is on Asteroids and Comets. He also collects meteorites. This is a good opportunity to ask questions on space science.

6. **Feb. 17 - Sky Tellers: The myths, magic and mysteries of the Universe** We’ll listen to Native American and International sky tales with a scientific analogy while the stars glide across the sky dome. Bring a pillow if you like.

7. **Feb. 24 - Telescopes and Binoculars: How they work, how to use them** What’s the right scope for you? We’ll discuss cost, how to set up and use them. We’ll point out on our star dome the objects that can be seen with a small telescope or binoculars. A lab demo on how a telescope works by following the light path will be given. Ask about Astronomy clubs.

8. **Mar. 2 - The Rest of the Story: Milky Way and other Galaxies, Black Holes, Dark Mater, Dark Energy** Based on the powers of 10, we’ll explore the Cosmos from Quarks to the Edge of the Universe. Where does Earth fit in? We’ll explore our Milky Way Galaxy, nebulae, star clusters and galaxy groups as well as inner space to quarks. What is Dark Energy and Dark Matter?

Winter 2016 - Vollbrecht Planetarium, Wednesday, 7 pm, 19100 Filmore, Southfield, MI 48075
Each Hour and a half show offers: Q&A, lecture, star show, handouts and a door prize.

Web: [www.vollbrechtplanetarium.com](http://www.vollbrechtplanetarium.com)  Planetarium Phone: (248) 746-8880

**Admission:**

- **Prepaid at Parks and Recreation Dept.** *
  - $5 for residents and $5.50 for non-residents
  - Eight-show series: $30 for residents
  - $40 for non-residents
*Southfield P&R Dept., 26000 Evergreen Rd.
Southfield, MI 48037, (248) 796-4620

- **Purchased at the door**
  - $7 for residents and $7.50 non-residents
  - Series of eight shows $40 for residents
  - $50 for non-resident

**Ask about our Private and School Shows.**
Scientists, Philanthropists and the Catholic Church Promoting Scientific Research of the Heavens through the Vatican Advanced Technology Telescope.

Bob Trembley and Bill Higgins, write about astronomy and space science for blog of the Vatican Observatory Foundation.

Brother Guy Consolmagno is director of the VOF, and has posted reprints of his *Across the Universe* series of articles from days past.

**Seven Ponds Open Invitation**

WAS members are invited to The Seven Ponds Astronomy Club monthly meetings.

More information about upcoming meetings, maps to Seven Ponds Nature Center, etc. are available at [www.sevenpondsac.com](http://www.sevenpondsac.com)

Please let John Lines know if you might attend so that appropriate plans can be made: (248) 969-2790, or jelines@yahoo.com

**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.