The W.A.S.P.

June 2015
### Asteroid Day—June 30th

Explosions ranged from 1-600 kilotons—the 1945 Hiroshima bomb was 15 kilotons. Several of these impacts would have caused serious damage if they had exploded over a city, rather than harmlessly over the ocean or uninhabited regions.

Recent advances in imaging and data processing have allowed astronomers to discover thousands of near-Earth asteroids, and hundreds of thousands of main-belt asteroids; as of this writing, there are 1590 known potentially-hazardous asteroids (PHAs). It's estimated that there are a million or more near-Earth

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**Asteroids.** Asteroids hit the Earth - this fact was made glaringly obvious by the impact event on February 15, 2013 over Chelyabinsk Oblast, Russia, that injured about 1600 people, and caused millions of dollars of property damage. This event was all over the news and social media - yet oddly, I've recently spoken with some people who had not heard of it.

Using data from Earth-bound infra-sound detectors and satellites, it was discovered that the Earth was hit 26 times by asteroids between 2000-2013—much more frequently then astronomers previously thought.
asteroids - we will never find them all at our current rate of discovery.

We have the technology to launch spacecraft that can detect these potentially hazardous asteroids, and we are devising methods to divert Earth-bound asteroids. It would only cost about as much as a freeway overpass to build a space telescope that could find these asteroids, says Dr. Ed Lu of the B612 Foundation, but as of this writing, NO world government has assigned the responsibility of planetary defense to any of their agencies.

Asteroid Day is asking the public to sign their worldwide declaration; I have, I urge you to as well.

This column originally appeared as a post on the Vatican Observatory Foundation blog, June 13, 2015. It was modified to fit the format of this newsletter.

- Bob Trembley

Over a hundred scientists, astronomers, astrophysicists, astronauts, entertainers, media personalities, and others have signed the Asteroid Day Declaration, calling for a one hundred-fold acceleration in the discovery and tracking of near-Earth asteroids, and the creation of a global awareness event, to be held each year on June 30th - the anniversary of the 1908 Tunguska impact event.
I have been playing with Kerbal Space Program for a month now, and I’m completely blown away! KSP is a space program simulator that allows you to design and build spacecraft (and space planes), launch them, get them into orbit, perform space missions (some simple, some VERY complex) and land on other worlds. What I learned about orbital mechanics simply playing the first 2 training missions is incredible! The developers have even collaborated with NASA and made an in-game mission mirroring the real-world NASA Asteroid Redirect Mission.

There is an enormous user community, and mods have come out that enhance functionality, and add real-world parts and spacecraft. There is an educational version of the app: KerbalEDU—meant for the classroom; the developers are working on an Earth History Campaign—starting with the X15, and progressing through the American/Soviet space race.

I did an astronomy presentation at a carnival at the elementary school in my wife’s district; I showed my meteorites, talked about the Sun and asteroids, and had a laptop running KSP - I was very pleased and surprised to see how many young students knew what it was. Some students begged their parents to get the app—after showing it to several parents, they too were impressed, and those students now own it. :) I mentioned my idea of starting a “Kerbal Rocket Club” at the school, and one young student’s eyes got HUGE!

I'm so impressed with KSP, I'm SERIOUSLY thinking of writing a grant to get several beefy PCs that I can lug around to schools and set up a roaming Kerbal-Lab. I’d like to see it in some form at the Kensington Astronomy at the Beach event too.

Bob Trembley

Letters to the Editor

Number Two and Proud!

It has of late come to my attention: a rumor about my being the "First Greatest Observer in Michigan". Not only is this a complete canard, but I am not responsible. The grounds for this alleged elevation above "Fast Mike" Simonsen of the Scovil Observatory are at best insubstantial and at worst off the rails.

1) Even if that worthy has gone into temporary hibernation, it is not dispositive. As with Nixon, Churchill, or Trudeau (or for that matter Coward or Porter), he can come roaring back at any time. 2) The rumor-monger, whom I will not identify, seemingly became unhinged by my wonderful cooking at the recent Cadillac West [Invitational] Star Party -- along with the exquisite open bar with it. Everything was out! Even I was carried away at times, and almost had to be carried out.

He means/meant well, but ten "Hail Mary’s" should straighten him out, right enough. "There is still time, brother ..."

Gary Ross
Reducing $\Delta v$ to land on the Mun.

Coming down... on the side of a crater... great!

In orbit.

Reentry, with the Mun above the horizon.

Russian-style land return via parachute.

Asteroid Redirect Mission

Orbital view.

Transfer orbit to the Mun.
Society Meeting Times

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

Jun. 1 ...... Cranbrook ...... Ken Bertin
Jun. 18 ...... Macomb ...... Dale Thieme
Jul. 6 ...... Cranbrook ...... Brian Thieme
Jul. 16 ...... Macomb ...... Riyad Matti
Aug. 3 ...... Cranbrook ...... Jon Blum
Aug. 20 ...... Macomb ...... Dennis David
Sep. 14 ...... Cranbrook ...... Cliff Jones
Sep. 17 ...... Macomb ...... Mike O'Dowd
Oct. 5 ...... Cranbrook Alan & Cheryl Kaplan
Oct. 15 ...... Macomb ...... Dick Gala
Nov. 2 ...... Cranbrook ...... Jim Shedlowsky
Nov. 19 ...... Macomb ...... Angelo DiDonato
Dec. 7 ...... Cranbrook ...... Dave Bailey

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 astronomy, space news, and whatnot!*

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.
June 1, 2015 Cranbrook Meeting Presentations

At every meeting of the Warren Astronomical Society, members or guest lecturers give astronomy presentations. Here is a list of scheduled presentations for the next few months:

**The Dawn Mission at Dwarf Planet Ceres - Bob Trembley**

The Dawn spacecraft has gone into orbit around the Dwarf Planet Ceres, and is currently spiraling down towards its Survey Orbit. In this lecture, Bob will show the most recent images of Ceres, and discuss the latest scientific findings from the Ceres mission team. Bob will also describe the Dawn spacecraft, its ion propulsion system, and recap its visit to the asteroid Vesta in 2011. When it was discovered in 1801, Ceres was considered to be a planet. It, along with several other "planets" got reclassified as asteroids around the mid 1800's. Ceres' was again reclassified as a "Dwarf Planet" in 2006, along with Pluto, and several other large bodies in the outer solar system. Ceres is the largest body in the main asteroid belt - making up 1/3 the total mass of the main belt. It is round, and similar to the icy moons of Jupiter and Saturn.

Bob has been an amateur astronomer his entire life; he is a Board member of the Warren Astronomical Society (WAS), and is the editor of the newsletter, and a volunteer NASA/JPL Solar System Ambassador. He was the Science-area lead for the 2014 North American Science Fiction Convention, DetCon1 in Detroit. Bob is fantastically interested in asteroids, and loves to observe the Sun.

**Sky Tracker Mount (short) - Joe Tocco**

For the Wide-field Astrophotographers in all of us... iOptron brings the Barn-door Tracker into the 21st century! Joe tests and reports favorably on iOptron's new digital camera tracking platform, SkyTracker.

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. Currently he serves on the Board as the Observatory Chairman. Joseph resides in Waterford.

**May 4 - Cranbrook Diane Hall In the Sky (short)**

Diane presents the new segment at this WAS meeting—discussing what’s in the sky this month!
June 18, 2015 Macomb Meeting Presentations

Tales From the Scanning Room:
The WASP Digitizing Project (short) - Dale Thieme

The Warren Astronomical Society came in possession of an extensive collection of the WASP from Larry Kalinowski about the time we would be celebrating our 50th year of operation as a club. This inspired the idea of digitizing the collection and Dale is presenting the tale of Jonathan Kade’s brainchild and Dale’s Sisyphean effort to bring it to fruition.

Dale, a Warren Astronomical Society member since 2009, served two years as secretary and is currently in his second year as treasurer. In 2011, he received the Blaine McCullough Award. Although he prefers to cheer on the efforts of other club members in astronomy, he does own a couple of scopes. Besides astronomy, Dale enjoys watching live streaming chess tournaments from around the world, bicycling, playing his bass and strumming his ukuleles (he’s not sure if anyone else enjoys it.)

Antique Astronomy Buttons (short) - Ralph DeCew

Celestial objects have found their way into human cultures throughout the world in many ways, one of them being useful as design elements on clothing buttons. Buttons often reflected current events and popular interests at the time and were not always thought of as being just small, insignificant objects. I hope to show some of that in this presentation.

Ralph was formally educated and trained as a naturalist. He has been an amateur astronomer since childhood, when his mother allowed him to stay home from school to watch the live Gemini and Apollo launches. A meeting with two prominent nature photographers in college led to his becoming a freelance photographer, and selling his work to photo agencies and magazines, as well as at local art shows. Today he continues to work as an astrophotographer, saying it is both enjoyable and the best way to ruin what could have been a great night! He and his wife are the present show coordinators of the Michigan Button Society, hosting two events every year at venues across the state.
Simulating the First Moon Landing (short) - Mike O'Dowd

Mike will be showing a computer simulation of the first moon landing by Apollo 11, using a program called Eagle Lander 3D. From inside the Lunar Module we will fly down to the lunar surface while dodging boulders and craters. I'll also be going over some little known facts about the Lunar Module and that first historic moon landing.

Mike first joined the Warren Astronomical Society in 1987. He held officer positions of Treasurer & 2nd Vice President during the late 20th century and early 21st century. Mike’s astronomy career when he received a 60 mm refractor telescope for Christmas in 1973. He acquired his 11 inch Schmitt Cassegrain telescope in 1996. He also enjoys PC Flight Simulating and recently began flying a radio controlled Quadcopter. Graduated from Macomb Community College with an Associate’s Degree and has been working in the automotive supplier sector since 1984.

Giving Effective Presentations (short) - Jonathan Kade

We want YOU to present at the Warren Astronomical Society. Intimidated by the idea of giving a talk and not sure where to start? WAS President Jonathan Kade shares some tips and ideas on presenting gathered through painful experience. We'll talk about what to put on a slide and what to leave off, when to use presentation notes and when not to, the types of presentations we are especially excited about hosting, and the #1 rule of presenting. He'll also demonstrate some common problems, both intentionally and, most likely, unintentionally."

Jonathan Kade is currently the president of this august institution. He was volunteered for the board by Diane back in 2007 and has been on it every year but two since. He has seen wonderful presentations and awful presentations, and has identified some guidelines he will try to follow.
Future Society Meeting Presentations

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“In the Sky” Presentations

The W.A.S. invites members to present “In the Sky” segments on important and timely events to watch for in skies over the next month.

**Guidelines:**
Segments will be about five minutes; therefore they cannot be comprehensive, but instead will have to hit on important information, and timely events. Not running over time or getting caught up in minutia is critical.

- Chose about five items for presentation.
- Each item will have one or two slides, and about 1 minute of time.
- Slides are to be given to Ken at least a day in advance to be added to the end of his "In the News" segment.

Item choices should follow these priorities, until the total of five are chosen:

1. Rare special events (e.g. Venus transit, Jupiter triple shadow transit, telescopic NEO)
2. Solar and lunar eclipses
3. Major meteor showers
4. Planetary conjunctions
5. Mars, Jupiter, Saturn approaching opposition
6. Mercury, Venus approaching greatest elongation
7. Showpiece deep sky object approaching midnight culmination (space permitting)
8. Other, at presenter's discretion, if space permits (e.g. ISS flyover, algol minima, challenge DSO, favorite constellation, action at Jupiter's moons, etc.)

Much of the above is available in tabular format in the RASC Observers handbook, which could be shared with presenters as needed.

If YOU would like to give a presentation at a Warren Astronomical Society meeting, contact: Dale Partin. firstvp@warrenastro.org. Presentations can be 5, 10, 15 or 40 minutes in length. Topics can include things such as: star party and convention reports, astronomy, cosmology, personal projects, science, technology, historical figures, How-To’s, etc…
Our newest officer Jeff MacLeod got to introduce about five dozen Detroiters to the glory of Saturn at the Mt Elliott Fun Shop’s event celebrating Saturn’s opposition on May 22nd. Kudos to Jeff for, er, juggling the crowd.

During the first week of June we made great progress on the new loaner-telescope program at the Grosse Pointe Woods Library. Mark Kedzior guided Joe Tocco, Dale Thieme, yours truly, and several library staff members through the modifications needed to get eight StarBlast telescopes ready for public use. It was great fun and provides a template for what we can do for and with other library systems; the program will be officially launched on June 26th.

Also on Thursday, June 4th, Bob Berta, Brian Klaus, and I dropped in on Grosse Pointe North High, where the Radio Astronomy Team (RATz) had their open house. We got to see the results of their award-winning student research on Martian geology and toured their recently upgraded lab as well as their rooftop radio telescope. It’s an amazing program led by an amazing teacher, Ardis Herrold, and we hope that the RATz can come share their exploits with the W.A.S. at some date in 2016.

On June 13th we will be hosting Pack #150 at Stargate; as this is not a regular Open House night and Joe Tocco will be out of town that weekend we need a few volunteers to join Jeff MacLeod at the observatory that night.

Cranbrook is hosting an event called “Camp After Dark” with an astronomy component to it on June 25th. The event runs 7 – 11pm and any participants are welcome to bring four guests, free of charge, to enjoy the event. There will be planetarium programs and, hopefully, the observatory will be open as well. We have several volunteers lined up to bring telescopes to allow for solar and twilight observing.

Finally, while the newly-created Asteroid Day takes place on June 30th, Cranbrook will be celebrating the event on July 11th. Please join Bob Trembley and other members to help educate the public about the dangers posed by NEOs from 1-4 PM at the Science Museum.

Diane Hall
Outreach Chair

Help us with Outreach! With the growing number of requests, we’ve developed a pool of members who are involved with our Astronomy Outreach outings—we could always use more!

Wanted

1.25” Eyepiece focuser, standard rack-and-pinion, to fit a 2 & 1/2 inch dia. small refractor tube, or be adaptable to fit.

Used in good condition okay.

Brian Klaus
alecbmdb1836ce@gmail.com
586-731-0011
Stargate Observatory
Monthly Free Astronomy Open House and Star Party

4th Saturday of every month in 2015!

June 27
July 27, August 22, September 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.
Stargate Observatory Update

May Open-house
The regular Open-house was held on Saturday the 23rd, five days following the new moon. The afternoon was partly cloudy with high, thin clouds at sunset. The observatory was opened at 8:00 PM. Skies were clear and the air was warm. The Kalinowski-Kula telescope was centered on the moon before sunset so early visitors had something to view. A young family brought their new telescope and we helped them set it up and understand how to use it. Jonathan Kade and Jeff MacLeod setup the 22” Dob and Jonathan tended it for a constant line of visitors. Riyad Matti expertly took over the Kalinowski-Kula Telescope when I had to step away often and Diane Hall was the Go-To Gal when I didn’t have answers for some of the questions that were asked. Many thanks to all the club members that made it a very successful open-house. Of the 80+ visitors at Stargate, nearly half were returning visitors and about a dozen club members but more than half were first-timers! The seeing was not the best but the skies stayed clear for hours and we closed the observatory around 1:30 AM.

Did I mention that we have a juggler? J

June Open-house
The regular Open-house is scheduled for Saturday the 27th, with a waxing gibbous moon that is just four days before the full. Sunset is at 9:14 PM and Astronomical Twilight ends at 11:30 PM. Arrive just before sunset (or sooner if you plan to set up a scope.)

A friendly reminder to be courteous if you arrive after dark and 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
The Kalinowski-Kula telescope continues to perform beautifully. There are still many upgrades planned, the most immediate will be the purchase of 2” filters which will be dedicated to the Kalinowski-Kula telescope, (pending Board approval.)

The filters will be an OIII, UHC, Variable Polarizing, Variable Neutral Density and a Contrast Booster.

Joe Tocco
2nd VP
JUNE 2015
Notable Sky Happenings

June 1 - 7
The Moon is to the left of Saturn in the SW evening sky on the 1st. Venus, at max. elongation E of the Sun on the 6th, sets 3 hours after the Sun.

June 8 - 14
Watch Venus draw closer to Jupiter in the W after sunset all month. (See June 30 below.)

June 15 - 21
The Moon is below Venus in the W the evening of the 19th. Solstice on the 21st! Summer begins for the Northern Hemisphere at 12:38 pm EDT.

June 22 - 30
The Moon is above Saturn in the S the evening of the 28th. Spectacular sight: Venus directly below Jupiter in the W on the 30th. Use binocs.

Now Showing
"Invaders of Mars"
This show highlights our ongoing exploration of Mars. We explore the Martian surface as seen by Earth's various spacecraft "invaders" and use the data gathered to explore the red planet as only CGI can: We fly over the great chasms, canyons and volcanoes, descend amid the ice of a Martian polar cap and are buffeted by swirling dust devils.

Also Showing
"Secret Lives of Stars"
Not all stars are created equal. Some are massive. Others are tiny; almost insignificant. The specific characteristics of a star will determine what type of life it will lead, how long it might live and even how it will die. We'll witness the amazing variety of stars and peer into their secret lives.

For astronomy information visit http://science.cranbrook.edu
The color scale in this image from the Planck mission represents the emission from dust, a minor but crucial component that pervades our Milky Way galaxy. The texture indicates the orientation of the galactic magnetic field. It is based on measurements of the direction of the polarized light emitted by the dust. The highlighted region shows the position of a small patch of the sky that was observed with two ground-based experiments at the South Pole, BICEP2 and the Keck Array. The image spans 60 degrees on each side.

The image shows that dust emission is strongest along the plane of the galaxy, in the upper part of the image, but that it cannot be neglected even in other regions of the sky. The small cloud visible in red, to the upper right of the BICEP2 field, shows dust emission from the Small Magellanic Cloud, a satellite galaxy of the Milky Way.

Article Source: http://www.nasa.gov/jpl/gravitational-waves-from-early-universe-remain-elusive/#.VM5keC4xt8Y

Native Skywatchers
EDUCATORS & COMMUNITY WORKSHOP

with Annette S. Lee, Carl Gawboy, William Wilson & Jeff Tibbetts

$75 fee per person
(Skywatchers Curriculum Material Provided)

Optional:
State Continuing Education Clock Hours (SCECH) or Continuing Education Units (CEU) through CMU available -additional $25 fee

Listening to Ikwe Anang (Women's Star) by Annette S. Lee

June 18 & 19, 2015
8:30am-5:15pm

ZIIBIWING CENTER
6650 E. Broadway, Mt. Pleasant, MI

Special hotel room rates at SECR- Reserve by May 27, 2015

To Register Contact:
Judy Pamp
989.775.4735
jpamp@sagchip.org or
Glenna Genereaux
989.775.4744
ggenereaux@sagchip.org
As some of you may or may not know, I’ve had property near Boon, Michigan in the family since 1963. It was originally 80 acres, and from about 1978 through 2003, I used to host Deep Sky star parties 2 or 3 times a year there. Over that period many club members participated in 4 to 7 day events bringing their camping gear, telescopes and friendships to the parties. We would have as few as 2 of us, and as many as 15, come here for the dark skies.

In recent years, my siblings have sold off their 20 acre parcels, leaving just the 20 acres I own. I decided to bring to life a vision I’d had for decades of a place to stay and have events once again.

Since the old observing area was no longer accessible through the other pieces of land, I decided to clear cut a portion of the front of the property, to allow us access into the field for observing. This occurred 3 years ago.

Last year I spent a significant amount of time up at Boon Hill on a project to build a club house. This facility was designed to house multiple “mobile” telescopes, which would allow us to roll scopes out of the building, along with a warm up room and sleeping quarters in mind.

We started the project in the spring, laying out the elevations and a drawing of the building, to be constructed by a contractor. In June, the area was cleared, the cement foundation poured, and readied for the build. In July, the construction crew travelled up from SE Michigan, trucks loaded with all the materials and crew of 4 spent 13 hours building the entire structure, before leaving around 9:00pm to go back home.

The following 8 weeks, I and some of the club members, Bill Beers, Joe Tocco, John Lines, Dan Bock (my son), Doug Bauer (FAAC), and

“Last month, March 20, 2015, we re-initiated the Boon Hill star parties with the new facility”
Steve Aggas worked on installing electrical, insulation, a vapor barrier and sealing the concrete floor. I also purchased some tables and chairs, a coffee maker, a space heater and some essentials for camping there. In all I was up there for 12 weekends working on this project.

Last month, March 20, 2015, we re-initiated the Boon Hill star parties with the new facility, where 3 of us had a 6" refractor, a 16" dob, 18" dob and a 25" telescope running that Saturday night. It was excellent skies for about half the night and we were able to try out some new equipment as well.

Rich Brenz had his 25” setup with a new Servo Cat system and was doing a shakedown of that, which proved to be a challenge. But he did some work on it over the next week, and I’m pleased to say he loves how it works now.

I had the 18” StarMaster out doing some galaxy hunting, along with my new IOPtron drive system for my Canon camera, for some time lapse imaging.

Joe had his 6” refractor which gave great views of the planets and some DSO’s, along with his 16” modified Lightbridge.

It was cold that night, into the teens, so when we quit for the night, it was nice to go inside and have reasonable temps, in the 50’s, in the building for sleeping. Rich went home, since he lives just 20 minutes away. The next morning was sunny and refreshing. Going outside and seeing scopes on the field, was reminiscent of days gone by. I can’t even express how wonderful this was to be there again, revitalizing.

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a legacy from 35 years back. It may be new friends now, but the same internal joy.

I’ve planned another 3 events with a small group of regulars for the remainder of this year, along with some additional impromptu trips, based on weather.

Over the next few years, we’ll slowly clear more of the wood debris left from the old pines, to make more room for people to setup.

Photos by Joe Tocco and Doug Bock
Some night time lapse videos I’ve produced: https://www.youtube.com/watch?v=b9cApKNO42E
Our Boon Hill Facebook group: https://www.facebook.com/groups/369811479741758/

Cheers and Clear Skies.
- Doug Bock
NGC 6811 is an open cluster in the constellation Cygnus the swan that is also known by the names “the hole in a cluster” and the “smoke ring cluster” due to its dark center that contains relatively few stars compared to its periphery. The cluster has an angular diameter of about 13’, which is of moderate size for an object of its type. It has an integrated apparent magnitude of 6.8, and a Trumpler classification of IV3p, indicating that it is poorly separated from the field stars with no obvious central concentration, has a wide range of stellar magnitudes, and is poor in number of stars. Despite the discouraging appraisal that could be inferred from the object’s classification, it fares well in moderately light polluted skies, where the cluster is more likely to stand out than it would against the overabundance of field stars that would be visible under better skies. Additionally, the unusual “hole” feature makes this object an interesting target that is a worthy diversion from more customary summer showpieces.

NGC 6811 is very easy to locate. The cluster lies only about 2° to the northwest of the star δ Cygni (mag. 2.8), which is one of the principal stars of the well-known Northern Cross asterism within Cygnus. Determining the position and star-hopping to the final destination should be straightforward, even for novice amateur astronomers with at least some working knowledge of the night sky. At the eyepiece, the cluster should be comprised of a few dozen stars of varying brightness, with a number of prominent strings and arcs of stars within its area. As noted earlier, the central region contains conspicuously fewer and dimmer stars than the outer edge, contributing to the uniqueness and memorability of this often overlooked object. The presence of a 10th magnitude pair of double stars at the eastern end of the cluster is also worth noting. Low to medium magnification is recommended, and the object should be visible in 6-inch or larger telescopes, although smaller apertures might be effective from dark locales.
June 1972

In this issue, Comet Bradfield (1972f) is tracked by Kenneth Wilson and Frank McCullough reports on Astronomical League’s Great Lakes Regional Convention.

An early version of the History SIG: Frank McCullough reaches back to previous issues of the WASP in “The W.A.S. Uncovers the ‘Good Old Days’.” Item of interest: “The Messier Club’s Big Summer Outing for 1970 A Trip to Starry Evert, Michigan”. Ever the workaholic editor, Frank finishes up with “Observational Astronomy (M4 and M19)” and “Constellation of the Month Hydra – the Sea Serpent”.

June 1974

Frank McCullough finds a new source for his “Constellation of the Month” articles: STAR NAMES, Their Lore and Mythology, by Richard Hinckley Allen. This month’s target, Canes Venatici.

“How to Live With a Telescope” by Paul E. Roques is an article submitted by Ken Wilson for the April ‘74 edition of “The Griffith Observer”. He goes on to report on Club doings in “Odds And Ends”.

Appropriately for the current weather we’re enjoying in Michigan this past month, we have “Astronomy Puns for a Cloudy Night” with no one taking responsibility (or blame) for said page.

June 1978

Loretta D. Caulley introduces us to “Auriga: The Charioteer” while Lou Faix covers telescope maintenance in “The Apprentice Astronomer’s Notebook”.

Jeff Stanek finishes the series: “The Outer Planets: Pluto (The Last Planet?)”. Little did he know...

(Continued on page 22)
WAS History S.I.G.

(Continued from page 21)

June 2015

In the Macomb meeting, I’ll be reporting on the digitizing project of the WASP. Here are links to the issues I’ll be referencing:

Covers
- 196903
  first cover
- 196909
  Cover with drawing of Saturn
- 197006
  Mad WASP and handwritten sample
- 197102
  Wasp theme for WASP
- 197106
  WASP gone to the beach
- 197407
  "Sky and Periscope" issue
- 197412
  Frozen Astronomer
- 197507
  Snoopy on dome
- 198309
  drawing of Stargate observatory
- 201301
  First issue of new cover design by Brian Thieme

Articles
- 197003
  Dubieties and Queries
- 197104
  Spectacular April Aurora
- 197208
  "Eclipse 1972" A W.A.S. K.
  A.S. Trip to Cap Chat
- 197510
  The Telescope and the Bicentennial
- 197604
  , 05 In the Beginning(parts 2,3)
- 198611
  , 12 In the Beginning (parts 1, 2)

Dale Thieme, Chief Scanner
I thought I would submit this beautiful picture for everyone to enjoy this month. It was taken by my son-in-law who has recently become interested in wide field imaging of the night sky. The photo shows the western and northern sky a little before midnight and includes some interesting features.

The brilliant moon on the lower left dominates the scene, with the planet Venus in Gemini directly above Alligator Hill in the Sleeping Bear Dunes National Lakeshore. The Beehive cluster (M44) can be seen a few degrees to the north of the moon.

He also caught a faint satellite trail near the top center of the frame as well as a small meteor on the upper right near the border of Auriga and Camelopardalis. And if you are really sharp-eyed, you can just see the fuzzy spherical patch of M38 a little above the dock to the left of center.

The water in the picture is that of Big Glen Lake with the town of Glen Arbor and some cottages on the other side. I found this to be a great image to examine closely with some star charts and identify the various stars. Enjoy!

Ralph DeCew
MEMBERSHIP
We currently have 99 members (19 of which are family memberships).

INCOME AND EXPENDITURES (SUMMARY)
We took in $221.20 and spent $909.61. We have $17,816.10 in the bank and $103.70 in cash, totaling $17,919.80 as of 4/30/2015.

INCOME
$132.00 Memberships and renewal
$39.59 Snacks
$48.00 Donations
$1.61 Amazon Marketplace (merchandise)

EXPENSES
$40.00 Snacks
$1.61 Postage
$68.00 Speaker Expenses (dinner, travel)
$500.00 Paul Strong Scholarship
$300.00 FAAC: Kensington Astronomy at the Beach

$12,882.05 Total donated to date for The Stargate Fund

$7786.96 remaining (adjusted in reconciling expenditures at Stargate)

Dale Thieme, Treasurer
April 30, 2015
May 2015 Meeting Minutes

WAS Board Meeting
May 4th, 2015
Board members present: Jonathan Kade, Diane Hall, Dale Partin, Joe Tocco, Dale Thieme, and Jeff Macleod.

President:
Jonathan brought the board meeting to order at 6:30pm. Upon bringing the meeting to order, Jonathan let the board members know that there wasn’t much scheduled for the month so far, and that he plans to order new WAS jackets for this year’s Astronomy at the beach event. Jonathan then asked for officer reports.

1st Vice President:
Dale Partin informed the board that some good speakers were on the way, and as always he is on the lookout for more. The logistics of presenting the new segment in the sky at the Macomb meetings was discussed by the board, in particular what programs would be best to use in presentation and who would do these presentation.

2nd Vice President:
Joe told the board that the next Stargate open house is scheduled for the fourth Saturday of the Month and he will be opening the observatory around an hour before sunset as usual. The power filter slide was discussed a bit, Joe emailed Jonathan the final invoice for the filter slide & some addition slides. Later in the meeting Dale P. set a motion for the final purchase agreement for the power filter slide and it was passed by the board unanimously.

Treasurer:
Dale T. gave an overview of the monetary situation of the WAS account, which is described in detail in the current issue of the WASP newsletter as part of the Treasurer’s report. We currently have 99 members, up 5 and roughly 18K in the bank. Dale also let us knows that the checks to Macomb for the scholarship fund and to the Ford Club for Astronomy at the Beach have both been cashed.

Secretary:
It was announced that the minutes from last month’s board meeting and general meetings have been emailed to Bob T and will be in the latest issue of the WASP, it was then noticed that Chuck D names was listed as secretary for the meeting agenda and we all had a good laugh about it.

Outreach:
Diane reminded the board how busy & productive outreach had been during April. She then added that there is an event schedule event for May, a Cubscout event in June, and lots going on during the summer. If anyone is interested in attending or volunteering upcoming outreach events should contact Diane at Outreach@warrenastro.org

Old Business:
Jonathan notified the board that he had disabled the ability to make donations through Meetup.com due to high fees; donations can still be accepted using Paypal.com. Letters need to be sent to Andy Khula and Larry Kalinowski in regards to their donations to the club. The Paul Strong Scholarship ceremony was held, Dale P. & Diane H. attended on behalf of the WAS. We currently have twenty dollars donated towards the scholarship fund. Dale T. has taken over the organization of the December banquet from Jon Blum as he will not be in the state during the banquet. Jonathan let the board know that he plans to check in soon with Chuck D. in regards to the IDA urban park designation for Stargate, hopefully when he is more settled in his new environment. Joe T. gave us an update to changes made to the Eagle Scout dob shed paver project, thinner, larger pavers are now planned to be used. This will also require no cutting of bricks which should help the cost & logistics of the project. Some more research in regards to the Honor Roll plaque at Stargate is planned by certain board member, combing old WASP issues and reaching out to previous members to help determine who should be added to the plaque.

Grosse Pointe Public Library Telescope Program:
Mark Kedzior gave a small presentation to the board detailing the Library Telescope program. Mark showed an example of the telescope that would be used for the program, an Orion Starblast Scope. A small compact scope with some minor modification
Cranbrook general meeting

Jonathan called the meeting to order at 7:40pm. The attendees announced their Names and first time visitors were welcomed, of which there were two. Jonathan then asked for officer reports.

1st Vice President:
The upcoming speaker schedule was announced, Jonathan K. and Diane H. will be giving the talk at the next Macomb meeting. Bob T. will be talking about the “Dawn Spacecraft” mission at the following Cranbrook meeting.

2nd Vice President:
The observatory open house on April 25th (Astronomy day) was a success. Skies were clear by 10pm under a larger moon. Double stars & Jupiter was observed. The new telescope has a new nickname as well, K2, so you know what we are talking about. The power filter slide for the K2 was used during the past few Stargate events and the board has just approved its purchase.

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 $18k in the bank account and we have 99 memberships.

Secretary:

The minutes from each WAS board meeting and general meeting will be published in each monthly issue of the WASP.

Outreach:

April outreach events were reviewed. Diane then went into the details of upcoming May outreach events. Two are scheduled so far, May 22 in Detroit and Mt Elliott Park and a Scout event at Stargate in June. If you are interested in participating in outreach please contact Diane at Outreach@warrenastro.org

It was also announced unfortunately that Roger Civic has passed; I never knew him personally but learned he was the designer of our logo (awesome) and was an active member of the club in the 70’s and 80’s

Observing reports

Spanning from Nova in Sagittarius by Gary Ross, Jupiter Shadow transits, occultation of Jovian moons, and mercury in the early evening.

Presentation: In the News
In the News presented by Ken B covered such topics as dwarf plants, WIMPS, The Hubble space telescopes 25th birthday, future mars rovers and more.

Presentation: In the Sky
Joe T. then presented In the Sky for May. Events including a meteor shower, mercury at elongation, Saturn at opposition, comet Lovejoy, in addition to some messier objects and double stars were given to members with days and times these events could be viewed.

Presentation (Short talk):
Ken Bertin finished up his presentation of the history of the telescope. Specifically covering radio, infrared, ultraviolet, X-ray, and Gamma ray telescope technologies.

Presentation (Long talk):
Dr. Ed Cackett from Wayne State University absolutely delighted us with his knowledge and work with neutron stars. From the history of the neutron star being a theoretical object, to being discovered and what we are now learning about these objects. These are the densest directly observable in the universe! With magnetic fields a trillion times that of

(Continued from page 25)
earth, surface gravity 100 billion times of the earth, and rotating up to 200 times a second (60 million times faster than earth). If you were not enthralled with Dr. Cacketts lecture you weren’t paying attention.

The meeting was ended at 9:45pm.

WAS General Meeting
Macomb, May 21, 2015
The meeting was started at 7:30 with 34 people in attendance.

Officer Reports:
President:
Dale opened the meeting and introduced himself. The attendees announced their names and first time visitors were welcomed, of which there were seven. Jonathan then took over and ran through the officer reports. Jonathan announced that May was coming to a close and the schedule was a bit thin but there are events upcoming.

1st Vice President:
The upcoming speaker schedule was announced, at Cranbrook, Bob T. will be talking about the Dawn mission to Ceres, and Bob Berta will explain to us why the sky is dark at night, sounds intriguing.

2nd Vice President:
The upcoming observatory open house schedule was announced for the 23rd of the month. Jonathan reminded everyone that when you hear K2, we’re talking about the new telescope not the mountain. It was also announced that the power filter slide has been purchased for the K2.

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 $18k in the bank account. The Paul Strong Scholarship fund is up to $310. We were also reminded that the deadline for Astro-league membership is almost here.

Secretary:
The minutes from each WAS board meeting and general meeting will be published in each monthly issue of the WASP. Jeff M. then tried (unsuccessfully) to offload some space art on the unsuspecting crowd.

Outreach:
Upcoming outreach events were reviewed. In particular outreach events for May 2nd with the Boy Scouts, events in Detroit, and more Scouts in June. There will also be a special event at Cranbrook on June 25; 7-11pm called “Camp after dark”, there will be booze so it is an adult’s only event. See you there!

Presentation: In the News
Ken B. provided his biweekly insightful look at the latest developments in astronomy. Topic such as galactic smash ups, mercury’s magnetic field, comet water, geysers on Enceladus, and Ceres mysterious bright spots were all covered.

Presentation: In the Sky
Ken B. also presented “In the Sky” we have two double Jupiter shadow transits coming up, as well as Saturn at opposition.

Presentation (long talk):
Jonathan and Diane shared the floor for their talk, “WAS amateurs go pro in Arizona”. They detailed there trip to Arizona to visit Rik and Delores Hill, Prominent members in the Catalina Sky Survey and former members of the WAS. They get to participate in such endeavors as discovering NEO (near earth objects) with a 61” telescope. Delores is rather successful in the field of geology and meteorites. By the end of the talk, I think everyone wanted to visit Rik & Delores, & that maybe they haven’t done as much with their life at the Hills.

The meeting was ended at 9:20

Bill Macintosh
Bill Macintosh passed away in April of this year. [The OTC has] not yet established another newsletter person; Bill was very faithful and productive at that position for many years.

- Jeff MacLeod

Mark Jeffery
OAC president
Astronomical Phenomena
June 2015

Day    Time    Event
01   15:02   Saturn 1.9°S of Moon
02   11:19   FULL MOON
06   14:00   Venus at Greatest Elong: 45.4°E
09   10:42   LAST QUARTER MOON
09   23:39   Moon at Perigee: 369713 km
10   18:30   Moon at Descending Node
13   03:59   Venus 0.5°N of Beehive
14   10:00   Mars in Conjunction with Sun
14   21:26   Mercury 0.0°N of Moon: Occn.
16   09:05   NEW MOON
20   06:28   Venus 5.8°N of Moon
20   18:29   Jupiter 4.7°N of Moon
21   11:38   Summer Solstice
21   14:10   Regulus 3.6°N of Moon
23   04:37   Mercury 1.8°N of Aldebaran
23   12:01   Moon at Apogee: 404134 km
24   06:03   FIRST QUARTER MOON
24   12:00   Mercury at Greatest Elong: 22.5°W
24   12:23   Moon at Ascending Node
25   21:58   Spica 3.8°S of Moon
28   20:27   Saturn 2.0°S of Moon


NEO / Comet Count

Near-Earth Objects Discovered

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<td>THIS YEAR:</td>
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Minor Planets Discovered

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<td>ALL TIME:</td>
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Comets Discovered

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<td>THIS YEAR:</td>
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<tr>
<td>ALL TIME:</td>
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</tbody>
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Source: IAU Minor Planet Center, June 15, 2015
http://minorplanetcenter.net/

June’s Moons

The Farmer’s Almanac calls June’s moon the: "Mead Moon", "Strawberry Moon" (c.f. Beard 1918), "Rose Moon", "Thunder Moon."

The Warren Astronomical Society will be Participating in:

Global Sunday

a worldwide celebration of the splendor of our Sun.

July 5th, 2015
Mark Your Calendar!

The AAVSO cordially invites all members of astronomy clubs and astronomical societies in Indiana, Illinois, Ohio and Michigan to participate in our spring meeting, June 4-6, at Ball State University in Muncie, Indiana. We have something for everyone and opportunities for volunteers from the amateur community to receive complimentary registrations for your time and efforts.

EVENTS:
Prior to the meeting, on June 3rd, AAVSO Director, Stella Kafka will be giving a talk at the Ball State Planetarium entitled "Variable Stars and Their Stories." The exact time is yet to be determined, but you can keep up with updates on the Spring Meeting Page.

Thursday evening, June 4th, we will hold an informal meet and greet session at the Muncie Hampton Inn at 8pm.

Friday will feature scientific papers all day and a planetarium show at the end of the paper sessions at Ball State's Charles W. Brown Planetarium.

Saturday morning, June 6th, we will hold the AAVSO Membership Meeting, featuring presentations from the Director and Council Officers explaining all the AAVSO is doing in research, outreach and education for the 2015 International Year of Light. Saturday afternoon the scientific paper sessions continue. Saturday evening is the closing banquet and award presentations.

You can register to attend one or all the days of the meeting in person or virtually/online. Please visit the 104th Spring Meeting of the AAVSO page for more details and instructions for registering.

VOLUNTEER OPPORTUNITIES:
We invite astronomy club members to bring your telescopes on Friday or Saturday for solar observing during coffee breaks.

If you are able to help with the following tasks we will provide complimentary registration to the meeting.

Help with shuttling between Ball State University and the meeting Hotels, approximately a 10 min drive (4 shifts):

Ball State to Hotels:
  Thu, June 4th at 1:30pm
  Thu, June 4th at 7:30pm

Hotels to Ball State:
  Sun, June 7th at 9am
  Sun, June 7th at 1:30pm

Those with SUVs or vans are especially encouraged!
We also offer complimentary registration for help at the registration table (3 shifts):

  Thursday evening meet and greet
  Friday morning and the tail end of the lunch break
  Saturday morning and the tail end of lunch break

Please contact us with questions or offers of help by emailing meetings@aavso.org

We hope to see you all there!

Mike Simonsen
Membership Director/Development Officer
American Association of Variable Star Observers
49 Bay State Rd.
Cambridge, MA 02138
http://www.aavso.org/

The AAVSO mission is to enable anyone, anywhere, to participate in scientific discovery through variable star astronomy.

Please support the AAVSO and its mission -- Join or donate today:
http://www.aavso.org/apps/donate
The Astronomical League helps members explore the wonders of our universe—maximize your membership!

**Observe Clubs.** Just about everyone has heard of the nearly 30 AL Observe Clubs. These are a group of *nationally recognized* observing lists and activities. Some are suitable for novices, some are for intermediates, while others are strictly for advanced amateurs. These clubs provide a low stress way to view the many wonders of the night sky.

**League Awards.** The Astronomical League wants to recognize those dedicated individuals who make astronomy happen. Every year, the League gives awards in several different areas: the Mabel Sterns Newsletter Award, the Webmaster Award, the National Young Astronomer Award, the Jack Horkheimer Young Person’s Service Award, and others. People really appreciate the recognition!

**Reflector Magazine.** Every member receives this full color quarterly magazine that’s published for League members by League members. Members are encouraged to submit articles and images for our national readership of over 16,000 amateur astronomers. The magazine also puts members in touch with dozens of Star Parties located all over the country and features columns from other professional groups.

**League Store.** We have a great League Sales Office, run by a dedicated and talented staff. Our astronomical handbooks are low cost and very popular — another of the many benefits of League membership. League Sales is vastly expanding its inventory, has gone to a color catalog, and now has an online, credit card capability.

**Book Service.** Searching for that special astronomical title in print? Separate from League Sales, the League provides a 10% discount on astronomy books with no shipping charge.

**National Convention of the Astronomical League.** At our National and Regional meetings, members rub shoulders with, among others, research astronomers, astronauts, authors, magazine editors, university professors, equipment manufacturers, as well as officers of the League. This is your chance to talk shop with those in-the-know.

**National Voice.** The League gives amateur astronomy a national voice on important issues, such as local, regional and national levels to fight light pollution and advance astronomical research.

Contact: [alcor@warrenastro.org](mailto:alcor@warrenastro.org)
Observatory Viewing every Friday & Saturday evening at 7:30pm-10:00pm

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

Acheson Planetarium Shows:

Friday/Saturday 7:00 pm  Invaders of Mars! Narrated by Tom Baker of the BBC's Dr. Who.
Friday/Saturday 8:00 pm  Michigan Sky Tonight
Friday/Saturday 9:00 pm  Secret Lives of Stars
Saturday 10:30 am  One World, One Sky: Big Bird’s Adventure
Saturday 11:30 am  Invaders of Mars!
Saturday 3:30 pm  Michigan Sky Tonight
Saturday/Sunday 12:30 pm  Young Stargazers Sky Journey
Saturday/Sunday 1:30 pm  Michigan Sky Tonight
Saturday/Sunday 2:30 pm  Invaders of Mars!

Asteroid Day at Cranbrook  July 11, 2015 Noon-4pm

- Lectures
  Geologist John Zawiskie presents Fire from the Sky
  Amateur Astronomer Bob Trembley presents Asteroids, Near Earth Objects and Meteorites.

- Displays
  New meteorites and displays in the Rocks from Space exhibit.

- Activities and Hands-on
  Handle meteorites and impact glass. Inspect and learn to identify meteorites.
Free Science Under the Dome—A free monthly science lecture series

Note; RSVP is required for the lecture

“Telescopes, Antarctica, and the North Pole”
September 10, 2015

by Jerry Dunifer, Professor Emeritus, Department of Physics & Astronomy, Wayne State University, Detroit, MI

ABSTRACT

In this talk I’ll summarize several interesting trips I have taken during the past couple years. This will include several visits to major astronomical observatories, a visit to the Antarctic Peninsula, and a visit to the geographic North Pole. Among the observatories, I’ll describe a visit to Apache Point Observatory, where we witnessed astronomers bouncing laser pulses from mirrors placed on the Moon by the Apollo astronauts. Using this technique, astronomers are now able to measure the distance to the Moon to an accuracy of 1 millimeter, the thickness of a paperclip!

In Antarctica we visited two scientific research stations--Vernadsky Research Base, an Ukranian station, and Palmer Station, a United States station supported by the National Science Foundation. I’ll describe some of the projects carried out at these two sites. The geographic North Pole was reached by traveling on the nuclear-powered Russian icebreaker, “Fifty Years of Victory”, the largest and most powerful icebreaker in the World. The trip involved traversing 700 miles through the arctic icecap (up to 3 meters in thickness) to reach the Pole. The return trip included stopping on three islands of Franz Josef Land, an uninhabited archipelago located at about 80 degrees north latitude. My talk will be illustrated by a number of photos taken at the different sites.

Website: http://planetarium.wayne.edu/
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>
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<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>
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<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>
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### 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)
- **Sunset Astronomical Society:** [http://www.sunsetastronomicalsociety.com/SASNewsletters.htm](http://www.sunsetastronomicalsociety.com/SASNewsletters.htm)
- **University Lowbrow Astronomers:** [http://www.umich.edu/~lowbrows/reflections/](http://www.umich.edu/~lowbrows/reflections/)

### WAS Member Websites

- **Bill Beers:** [Sirius Astro Products](http://www.siriusastro.com)
- **Jon Blum:** [Astronomy at JonRosie](http://www.jonrosie.com)
- **Jeff MacLeod:** [A Life Of Entropy](http://www.alifeofentropy.com)
- **Bob Trembley:** [Balrog’s Lair](http://www.balrogslair.com)
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.

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. is available at http://bhmich.com/sevenpondsac/.

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