The predicted Camelopardalids meteor storm failed to produce any more meteors than the ambient flux—at least for myself and the Society members I spoke with; comet ISON, the “comet of the century” disintegrated as it rounded the sun—although that was interesting and educational in its own right, I’m saddened that our December skies were not host to a beautiful comet for school children to behold.

Predicting the performance of non-periodic astronomical events—especially that of new comets and new meteor showers is a path to embarrassment. We can predict the performance of Halley’s comet, and meteor showers such as the Perseids and Leonids because they have a long history—even then they can surprise us, as the Leonids did in 1833.

The American Meteor Society website suggests “Unless something new is discovered, the next possible outbursts are from the Beta Hydrids in 2020 and the Tau Herculis in 2022. Like the Camelopardalids, these predictions are just possibilities and certainly not sure bets.” My personal rule of thumb is “don’t make predictions about such things—just wait and see.”

Bob Trembley
May was a BUSY outreach month for the Society: Boy Scouts at Stargate and Cranbrook, Astronomy Day at Cranbrook and Stargate, two outreach events at the Edsel Ford House, and our regularly scheduled open house. Whew! Angelo is going to need a vacation!

We have taken delivery of the long-awaited Kalinowski telescope; Joe Tocco and Riyad Matti have spent long hours installing and testing it.

These are “interesting times” I can deal with!

*Bob Trembley*

### Praise for Stargate and WAS Outreach

Joe, we had an amazing time. Everyone was extremely warm and friendly which made a huge impact in my family. We looked up at the stars last night and cannot wait to take our telescope to Lake Michigan. We will be back to another open house.

Thanks

*Tony Campana*

Mr. Campana teaches astronomy to 8th graders at Shrine High School and Academy—*Editor.*

### In This Issue:

- Headline: The Meteor Storm That Wasn’t
- The Gravity Well (From the Editor)
- President’s Field of View
- May Society Presentations
- Meeting Times
- Astronomy Outreach & Observatory Update
- Astronomy Day at Cranbrook
- Astronomy Day at Stargate
- Edsel Ford House Outreach Events
- Stargate Open House
- Old Stargate Observatory Telescope Retired
- Earth as Art
- Object of the Month
- NASA Space Place Article
- WAS History Sig
- How to Calculate Field of View
- Treasurer’s Report
- Meeting Minutes
- Cranbrook Planetarium Schedule
- Vollbrecht & WSU Planetarium Schedules
- Astronomical League Info
- GLAAC Info / Kensington Event
- Caboose

---

### Don’t Drink and Veen!

Within probably the Greatest W.A.S.P. Ever Produced (May, *instant*), there appeared a piece by Comrade Bauman; an essay of recollections of youth as well as disappointments with what has transpired with our better knowledge of to-day. For instance, I too am ticked off about no vegetation on Mars! It was a perfectly reasonable hypothesis.

I take fond note of Bauman's father, a man of sensitivity, pointing out the Big Dipper with a long necked Budweiser on summer nights. One is mystified that drinking did not propel his father into the deeper mysteries of Astronomy.

*Regardez* myself. There was one Saturday night, probably in 1974, when I got REALLY stinko at the Szymanski house on Detroit's east side. This episode even stood out from the usual, as in staggering drunk. Although autumn, I collapsed face up on the grass and looked at the waning gibbous Moon bathed in stratus clouds. It would simply not stay put, but continually wandered about the sky. At first I thought there was something hay-wire with the Earth's axis, or was the planet reversing its spin? Then: no, it is my eyes, all a matter of will power to regain control of the old vision. However, try as I might it was impossible to steady up the Moon, enough in itself to be a cautionary tale… although I cannot now recall whether the big heave came before or after this astronomical observation. Where such things are an art form, in Australia it called "growling at the grass".

Then there was the time some years later using the (then) 12-and-a-half inch Newtonian at the Veen Observatory. I tried variable star observing with a skin full of Wild Irish Rose. Absolutely nothing worked, and never to be tried again. I may give a "short talk" on this subject before the Society someday, but am having trouble recalling enough case studies.

*Gary Ross*
Love at first sight. It's a cliche, but for some people it's also reality. Like, for instance, just about everybody who looked through the new Kalinowski Refractor at the May open house. Binocular views of Saturn that rivaled the Voyager photos of my youth. Clouds on Mars well past opposition. Even in the temporary cradle on the old mount, it was a spectacular experience for newbies and grizzled veterans alike.

Stargate is a story about the club's founders and early members: Dick Polus, Gerry and Margaret Alyea, Don Misson, and many more, including current members Tim Skonieczny and Mark Kedzior, who was a kid in the 60s. People who built a beautiful telescope for our then-home, Lincoln High School. People who took the initiative to work with the Rotary Club to build an observatory in an area with nice, dark skies. People who put in the effort and thought to design a site that still works well for us today. (Not to mention Chris Edsall, who came up with the moniker long before it was a popular film.)

It's a story about long-time members that have gone: Larry Kalinowski, who led observing contests and UFO launches for years. Bob Watt, who was volunteering on construction projects there into his eighties. Blaine McCullough, who stepped up to keep the place alive during some dark days in the club. His cousin Frank, who wrote some notable observing accounts from all over the country, including Stargate.

Most long-time members have had roles to play: Riyad Matti as probably the most persistent observer the site has seen, not to mention our greatest visionary. Marty Kunz and Bob Berta have been observatory directors. John Herrgott first suggested building the Big Dob. Bill Beers, Dennis Schmalzel, and Steve Greene helped build the dob shed. Ken Bertin and Lee Hartwell have led hundreds of scout nights. Fred Judd and Doug Bock spent a lot of time there back in the day. Dale Partin has volunteered many a night (but then it's almost literally his backyard). And Joe Tocco, who joined in the 70s as a teen and has put countless hours into the care and feeding of the observatory in the last few years, even before he was Observatory Chair.

Many more names fit in the story in my memory. Mike O'Dowd, Dick Gala, Steve Uitti, Larry Phipps, Bill Kippen, Rick Gossett, and Andy Khula, who put in hours under the hot July sun to reroof the building. Lots of picnic fun with Therese Oldani, Phil Martin, Jon Blum, Dave Bailey, Steve Harvath, Gary Gathen, Dave D'Onofrio, and music man Jim Shedlowsky. Gary Ross, who threatened to tear out the old water-damaged floor with his bare hands.

Then there are the new people, who I define as people who joined around when I did and afterwards. Speaking for myself, I've made so many friends at Stargate: Debra and Brian Chaffins, Brian and Dale Thieme, Ben Handelsman, Sai Rajagopalan, Chuck Dezelah, Bob Trembley, Angelo DiDonato, almost everybody listed above, and many more. (Not to mention two of Diane's and my best friends, whom we met at an open house and have somehow never convinced to join...) We reroofed the observatory when I had only been a member for three years: July 4, 2009, a holiday weekend I'll never forget.

The tens of thousands of hours all these people (and many more - I'm terribly sorry if I left you out!) have put into Stargate are still paying off handsomely. We can't wait to see the final results of this latest effort.

Jonathan Kade
May Society 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:

June 2 - Cranbrook  
**Marty Kunz: Dark Space**

The Universe is a dangerous place filled with things that not only make it difficult to visit, but also to live in. Actually, we do live and travel in space. We are seemingly safe under our dome of deceivingly thin atmosphere. We go about our daily lives without realizing the perils that surround us in Dark Space. This talk will take us on a journey through the galaxy, exploring the pitfalls of instant or slow death that the Universe has to offer.

Marty has been a member of WAS for over thirty years, and has served in every officer position. He has worked at Cranbrook Institute of Science in the Astronomy Department for over 25 years. He hosts two live internet radio shows every week on Astronomy.FM, reaching over 30,000 listeners per month.

Read more on Meetup: [http://www.meetup.com/warrenastro/events/183695202/](http://www.meetup.com/warrenastro/events/183695202/)

June 2 - Cranbrook  
**Bob Berta: Binoculars for Astronomy - Choosing and Using Them**

Bob will discuss the basic points of binoculars, what to look for in the specs and what to avoid. He will also cover how to test binoculars for good alignment, and finally what to look for in a binocular mainly used for astronomy and what to look for if you want it to do double duty. He will end with a discussion of how to hold them or support them for ease of use and steady seeing.

Read more on Meetup: [http://www.meetup.com/warrenastro/events/183695202/](http://www.meetup.com/warrenastro/events/183695202/)

June 15 - Macomb  
**Cynthia Maher: Astronomical Effects on Earth's Environment - Some Hypotheses**

We hope for simple answers to keep our environment safe, but the answers are not simple. From below, the earth warms us; within our earth/air system, plants, animals, humans, and bacteria play a balancing game; from above things like radiation and dust affect us. This talk will be about our environment and some of those influences from above.

Cynthia is a Real-Time Controls Engineer working for General Motors. She has four adult children, and says that she has lots to brag about! Her lifelong hobbies are reading, trying out new hobbies, and becoming a jack-of-all-trades.

Read more on Meetup: [http://www.meetup.com/warrenastro/events/178039502/](http://www.meetup.com/warrenastro/events/178039502/)
Future Society Meeting Presentations

July 7 ............... Cranbrook ...... Joe Tocco ............... The Andy Khula Mount for Stargate Observatory, and Making Your Own Dew Heater

July 7 ............... Cranbrook ...... Mike O'Dowd ............... Earthrise from Apollo 8

July 17 .............. Macomb ........ Federico Bernadini ...... TBD

August 4 ........... Cranbrook ...... Jon Blum ............... Southern Hemisphere Skies

August 4 ........... Cranbrook ...... TBD ....................... Short Discussion

August 21 .......... Macomb .......... J.P. Sheehan .......... Propulsion system for CubeSATs

September 8 .... Cranbrook ...... Jim Shedlowsky .... From Peenemunde to the Moon (the Space Race - 1945 - 1969)

September 8 .... Cranbrook ...... Jim Shedlowsky ...... TBD

September 18 ... Macomb ........ Jeff MacLeod ........... The GAIA Spacecraft: Mapping the Milky Way

Some presentations slots are available for the 2nd half of 2014. 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…
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

June 2.......Cranbrook .....Steve Uitti
June 19.....Macomb ........Angelo DiDonato
July 6 ........Cranbrook .....Dennis David
July 17 ......Macomb ........Brian Thieme
August 4....Cranbrook .....Alan and Cheryl Kaplan
August 21..Macomb ........Dale Thieme

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.
Astronomy Outreach

Upcoming Astronomy Outreach Events:

- June 21  Boys and Girl Scouts at Stargate Observatory
- June 26  Astronomy at Roseville Public Library
- June 28  Monthly Stargate Observatory Open House
- July 26  Monthly Stargate Observatory Open House

The outstanding Outreach support I've received from Ken Bertin, Diane Hall, Joe Tocco, Bob Berta, Bob Trembley, Jim Schedlowski and Lee Hartwell is most appreciated. Thank you all very much.

Angelo DiDonato

WE NEED YOUR HELP! With the growing number of requests, we would like to develop a pool of members who would like to become involved with Astronomy Outreach outings.

Stargate Observatory Update

The Warren Astronomical Society took delivery of the 8" f/12 refractor on Saturday, May 3rd. Still not received from D&G is the dew-shield and dust cover. The existing mount at Stargate is being retro-fitted to hold the new telescope temporarily (on May 16th Friday) so it can be properly star-tested. Once an acceptable star-test is performed and we receive both the dew-shield and dust cover then payment will be made to D&G Optical and the 12.5" Cassegrain and existing equatorial mount will be decommissioned. The new Andy Khula AP1200GTO will be installed on an extended pier and the telescope will be mounted and balanced for use in the dome.

Tentatively a presentation on the telescope, mount and it’s operation and use is scheduled for July.

Joe Tocco
Astronomy Day at Cranbrook, May 10, 2014

The Society setup for solar observing at Cranbrook on Astronomy Day - May 10th. For several hours we had a steady stream of people looking through telescopes, and talking with astronomers.

Video by Jon Blum: https://www.youtube.com/watch?v=UuUBypc2OGE
Astronomy Day at Stargate Observatory, May 10, 2014

Arrival time: I arrived at 6:45 PM and opened the dome.

Weather: The skies were clear and calm through sunset. Mars and Jupiter were the first to join the waxing gibbous moon.

Club members: Too many club members to list, both past and present.

Visitors: A few recent visitors have returned and they brought their telescopes too.

Club Telescopes: 12 ½” Cassegrain and the 22” were operational and used throughout the night.

Member/Visitor Telescopes: Several telescopes were brought to Stargate, including a rather large 12” Meade LX200, a brand new Celestron 8” Nexstar which produced excellent views on its first-light adventure.

Summary: Seeing was outstanding and clear all night long. Some instability in the atmosphere was notable when viewing the planets and the moon but overall it was a nearly perfect evening. The temperatures held steady at about 50 deg.F and the humidity was low. No dewing problems and no bugs to speak of all night long. Someone did mentioned one mosquito. Besides the moon, there was Mars, Jupiter, Saturn, Mercury, several double stars and the brighter of several star-clusters and galaxies to view in the various telescopes. Three of us stayed through the night until morning and they skies were still favorable when I woke at 5:15 AM. I button up the dome, the DOB shed and the observatory and headed for a cup of coffee.

Joe Tocco
Ford House Outreach Events - May 24 & 29, 2014

The Society was invited to do two outreach events at the Edsel and Eleanor Ford House in Grosse Pointe Shores. On May 24th, several Society members gave short presentations, and afterwards set up their telescopes in the parking lot, and shared their knowledge and enthusiasm for astronomy. Parents and students alike got to see Jupiter, Mars, and Saturn, and some double stars.

On May 29th several Society members returned and set up in a field by the play house, for an adults-only night under the stars. There was a fire pit for the attendees, as well as live music, and wine and cheese.

Activities Coordinator Connie Locker reported very positive feedback from guests at both events. A donation was made to the Society for our efforts from the estate.

Thanks to: Bob Berta, Lee Hartwell, Ken Bertin, Bob and Connie Trembley, Jonathan Kade, Diane Hall, Angelo DiDonato, and Joe Tocco for their efforts!
Stargate Observatory
Monthly Free Astronomy Open House and Star Party

4th Saturday of every month in 2014!
June 28, July 26, August 23, September 27

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 - Open House May 24, 2014

After a successful Astronomy Day at Cranbrook, several members headed over to Stargate Observatory for another
Joe Tocco built a temporary cradle for the new telescope to use with the old mount.

Last light on the old 12" reflector

- Single frame, unstacked, unprocessed, and not entirely focused test images through the new telescope
**NEO Terminology**
LD = Lunar Distance = 384,400 km (238,900 mi)
389 LD = 1 Astronomical Unit (AU = Earth-Sun distance)

1.1 LD = 422,840 km
73.4 LD = 28,214,960 km

Data from NASA’s Near-Earth Object Program Website
http://neo.jpl.nasa.gov/ca/

---

**Astronomical Phenomena June 2014**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>03:07</td>
<td>Jupiter 5.5°N of Moon</td>
</tr>
<tr>
<td>02</td>
<td>23:25</td>
<td>Moon at Apogee: 404956 km</td>
</tr>
<tr>
<td>03</td>
<td>18:05</td>
<td>Triple Jovian shadow transit</td>
</tr>
<tr>
<td>04</td>
<td>12:35</td>
<td>Regulus 5.0°N of Moon</td>
</tr>
<tr>
<td>05</td>
<td>15:39</td>
<td>FIRST QUARTER MOON</td>
</tr>
<tr>
<td>07</td>
<td>19:44</td>
<td>Mars 1.6°N of Moon</td>
</tr>
<tr>
<td>08</td>
<td>17:05</td>
<td>Spica 1.8°S of Moon</td>
</tr>
<tr>
<td>09</td>
<td>00:36</td>
<td>Moon at Ascending Node</td>
</tr>
<tr>
<td>10</td>
<td>14:11</td>
<td>Saturn 0.6°N of Moon: Occn.</td>
</tr>
<tr>
<td>12</td>
<td>23:11</td>
<td>FULL MOON</td>
</tr>
<tr>
<td>14</td>
<td>22:34</td>
<td>Moon at Perigee: 362062 km</td>
</tr>
<tr>
<td>15</td>
<td>06:57</td>
<td>Jupiter 6.3°S of Pollux</td>
</tr>
<tr>
<td>19</td>
<td>13:39</td>
<td>LAST QUARTER MOON</td>
</tr>
<tr>
<td>19</td>
<td>18:00</td>
<td>Mercury at Inferior Conjunction</td>
</tr>
<tr>
<td>21</td>
<td>05:52</td>
<td>Summer Solstice</td>
</tr>
<tr>
<td>21</td>
<td>15:30</td>
<td>Moon at Descending Node</td>
</tr>
<tr>
<td>23</td>
<td>08:00</td>
<td>Venus 5.6°S of Pleiades</td>
</tr>
<tr>
<td>24</td>
<td>07:54</td>
<td>Venus 1.3°N of Moon</td>
</tr>
<tr>
<td>25</td>
<td>01:22</td>
<td>Aldebaran 2.0°S of Moon</td>
</tr>
<tr>
<td>27</td>
<td>03:09</td>
<td>NEW MOON</td>
</tr>
<tr>
<td>27</td>
<td>00:00</td>
<td>June Boötid meteors peak</td>
</tr>
<tr>
<td>30</td>
<td>14:09</td>
<td>Moon at Apogee: 405932 km</td>
</tr>
</tbody>
</table>

---

**June’s Moons**

The Farmer's Almanac calls June’s moon the: "Mead Moon", "Strawberry Moon" (c.f. Beard 1918), "Rose Moon", "Thunder Moon."
This chart shows the sky as it appears at approximately 10pm EDT near mid-month at northern mid-latitudes.

JUNE 2014
Notable Sky Happenings
June 1 - 7
The bright star to the right of the Moon in the west the evening of the 1st is Jupiter. Two nights later the Moon is below Regulus, in Leo. The evening of the 7th the Moon is below Mars.

June 8 - 14
The Moon is to the left of the star Spica, the evening of the 8th and to the left of Saturn the evening of the 10th.

June 15 - 21
Solstice on the 21st! Summer begins for the Northern Hemisphere at 6:51am EDT. (Autumn begins in the Southern Hemisphere.)

June 22 - 30
The bright star to the left of the Moon in the pre-dawn sky on the 24th is Venus.

Coming July 5
“Robot Explorers”
Near the end of the twentieth century, we began launching unmanned probes into the far reaches of the solar system. What they discovered was amazing and in some cases unexpected. New space missions are underway, and many of these robust spacecraft are still operational. We will pay tribute to these robots and learn what they have taught us about our solar system.

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
A vast alluvial fan blossoms across the desolate landscape between the Kunlun and Altun mountain ranges that form the southern border of the Taklimakan Desert in China’s Xinjiang Province.

This image was created by the U.S. Geological Survey (USGS), and is available from the EROS Digital Image Gallery.
NGC 6210 is a small, but distinct planetary nebula in the constellation Hercules. Although this heroic figure’s celestial form is closely associated with the renowned globular cluster M13, it contains several objects worthy of the attention of amateur astronomers, including notably NGC 6210, which is also sometimes called the Turtle Nebula. This nickname results from the conspicuous coloration of the object, as well as for its discernable faint projections that vaguely resemble reptilian appendages. With an angular diameter of merely 14”, the nebula is truly tiny in size. It has an integrated visual magnitude of 8.8, which when considered in the context of its compactness, signifies a relatively high surface brightness and is therefore reasonably amenable to observation from sites with significant light pollution. The object is about 6500 light years distant and is the product of the expiration of a star similar to our own sun.

NGC 6210 is located 4 degrees northeast of the star Beta Herculis (mag 2.8), which itself should be readily visible and easily found, having a position that is about 10 degrees off of the southwestern corner of the constellation’s keystone asterism. At low magnification, the Turtle Nebula will appear star-like and forms a narrow triangle with two 7th magnitude stars, with perhaps only its suggestively non-stellar greenish hue hinting at its true identity. An increase in magnification will reveal a non-annular disc of fairly uniform brightness that marks the inner core region of the nebula. When viewing conditions permit, NGC 6210 fares quite well at high power (>150x), with hints of the turtle’s limbs amongst the faint lobes of the outer shell of the object’s domain, especially when using apertures of at least eight inches. As is the case with most nebulae, the use of a narrow band nebula filter is recommended for increasing contrast, improving the prominence of elusive features, and subduing the effects of sky glow.
When you think about the four rocky planets in our Solar System—Mercury, Venus, Earth and Mars—you probably think about them in that exact order: sorted by their distance from the Sun. It wouldn't surprise you all that much to learn that the surface of Mercury reaches daytime temperatures of up to 800°F (430°C), while the surface of Mars never gets hotter than 70°F (20°C) during summer at the equator. On both of these worlds, however, temperatures plummet rapidly during the night; Mercury reaches lows of -280°F (-173°C) while Mars, despite having a day comparable to Earth's in length, will have a summer's night at the equator freeze to temperatures of -100°F (-73°C).

Those temperature extremes from day-to-night don't happen so severely here on Earth, thanks to our atmosphere that's some 140 times thicker than that of Mars. Our average surface temperature is 57°F (14°C), and day-to-night temperature swings are only tens of degrees. But if our world were completely airless, like Mercury, we'd have day-to-night temperature swings that were hundreds of degrees. Additionally, our average surface temperature would be significantly colder, at around 0°F (-18°C), as our atmosphere functions like a blanket: trapping a portion of the heat radiated by our planet and making the entire atmosphere more uniform in temperature.

But it's the second planet from the Sun -- Venus -- that puts the rest of the rocky planets' atmospheres to shame. With an atmosphere 93 times as thick as Earth's, made up almost entirely of carbon dioxide, Venus is the ultimate planetary greenhouse, letting sunlight in but hanging onto that heat with incredible effectiveness. Despite being nearly twice as far away from the Sun as Mercury, and hence only receiving 29% the sunlight-per-unit-area, the surface of Venus is a toasty 864°F (462°C), with no difference between day-and-night temperatures! Even though Venus takes hundreds of Earth days to rotate, its winds circumnavigate the entire planet every four days (with speeds of 220 mph / 360 kph), making day-and-night temperature differences irrelevant.

Catch the hottest planet in our Solar System all spring-and-summer long in the pre-dawn skies, as it waxes towards its full phase, moving away from the Earth and towards the opposite side of the Sun, which it will finally slip behind in November. A little atmospheric greenhouse effect seems to be exactly what we need here on Earth, but as much as Venus? No thanks!

Check out these “10 Need-to-Know Things About Venus”:

Kids can learn more about the crazy weather on Venus and other places in the Solar System at NASA’s Space Place: http://spaceplace.nasa.gov/planet-weather.
June 1973
This month’s cover was illustrated by Roger Civic, who also created the W.A.S. logo. Ken Wilson’s “Everything You Wanted to Know About Stargate Observatory” is in serious need of updates now that the Larry F. Kalinowski telescope has arrived.

Frank McCullough introduces us to Coma Berenices in “Constellation of the Month”. In the cloudy nights department, the WASP provides…”Chess Problems”

June 1977
In this, one of the “Vespa” named issues, Rik Hill tackles the issue of night time sogginess in “Much Adieu About Nothing Or What to Do to Say Adieu to Dew”.

June 1980
The only WAS member originated articles in this issue are found in the minutes, classifieds and “Planetarium Roundup”. The rest is taken up with what looks to be news releases: “New Multimirror Telescope”, about a proposed telescope by the University of Arizona and the “NASA Report:”, covering Alternate Orbiter Thermal Protection to Be Studied, NASA Testing 55-TO-65-Year-Olds For Space Flight Stresses, Voyager Pictures Used to Map Jovian Moons, Large Space antenna Subject of Study, and Antarctic Meteorite Researchers Find Promising New Field.
The Field of View (FOV) is the width (in degrees) that you can see through an eyepiece.

**Apparent Field of View (AFOV)**
Width of field you can see by looking through the eyepiece alone (without a telescope), at unfocused sky.

The AFOV is about the same for all eyepieces of a specific class. For example, Plössl eyepieces typically have an AFOV of about 50°.

**True Field of View**
Width of the actual Field Of View you would see using this eyepiece in a given specific telescope.
The True FOV is the AFOV divided by the magnification.

**Magnification**
Magnification = focal length of telescope divided by the focal length of eyepiece.
The focal lengths of telescopes and eyepieces are usually printed on the telescope and eyepiece.

**Examples:**
My Celestron 8-inch Schmidt Cassegrain telescope has a focal length of 2032mm.
Its included Plössl eyepiece has a focal length of 25mm and an Apparent Field of View of 50°.
Therefore its magnification is 2032/25 = 81x
and its true FOV of 50°/81 = 0.62°.

For that same telescope, I bought a Pentax eyepiece with a 20mm focal length and a 70° AFOV. When I use that eyepiece in my telescope, I get:
Magnification 2032/20 = 102x
and true FOV 70°/102 = 0.69°.

I also bought a Meade eyepiece with a 36mm focal length and a 70° AFOV. When I use that eyepiece in my telescope, I get:
Magnification 2032/36 = 56x
and true FOV 70°/56 = 1.25°.
MEMBERSHIP

We currently have 105 members (17 of which are family memberships).

INCOME AND EXPENDITURES (SUMMARY)

We took in $355.85 and spent $145.72. We have $18,417.34 in the bank and $199.90 in cash, totaling $18,617.24 as of April 30, 2014.

COSTS AND REIMBURSEMENTS

<table>
<thead>
<tr>
<th>Amount</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$40.00</td>
<td>Reimbursement for snacks</td>
</tr>
<tr>
<td>$17.98</td>
<td>Snack Supplies</td>
</tr>
<tr>
<td>$20.00</td>
<td>Reimbursement to Dale Thieme for printing and mailing WASP (5.00/month – Jan, Feb, Mar, Apr)</td>
</tr>
<tr>
<td>$73.02</td>
<td>Dining and travel expenses for Cranbrook speaker (Jim Foerch)</td>
</tr>
</tbody>
</table>

INCOME

<table>
<thead>
<tr>
<th>Amount</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$56.35</td>
<td>Donations for snacks</td>
</tr>
<tr>
<td>$286.00</td>
<td>New (5) memberships and renewals</td>
</tr>
<tr>
<td>$6.00</td>
<td>Misc. merchandise</td>
</tr>
<tr>
<td>$7.50</td>
<td>Astronomical League membership</td>
</tr>
<tr>
<td>$10,872.05</td>
<td>Total donated to date for new telescope and mount</td>
</tr>
</tbody>
</table>

Dale Thieme, Treasurer
April 30, 2014
Meeting Minutes

WAS Board Meeting,
May 5, 2014

Board members present: Jonathan Kade, Dale Partin, Joe Tocco, Dale Thieme, Chuck Dezela, Angelo DiDonato, Bob Trembley

Jonathan brought the board meeting to order at 6:36pm. Gary Ross, Jon Blum, Dave Bailey, and Ken Bertin were also present.

Reports:

President: Upon bringing the meeting to order, Jonathan called the board members’ attention to his meeting agenda. He called on each Board Member in turn and asked for their reports.

1st Vice President: Dale P. announced that the schedule for speakers looks good for the next few upcoming months. He mentioned that he is talking with Joe Tocco about the planned July 7th presentation concerning Stargate and the new Kalinowski Telescope. He also mentioned that we received a letter of thanks from Jim Foerch for inviting him as a speaker to a previous meeting.

2nd Vice President: Joe announced that the Astronomy Day festivities (May 10th) planned for Stargate will essentially operate very similarly to a regular open house observatory night, with opening set for 6:30pm and continuing as weather permits. We will proceed with the regularly scheduled open house as well, which will be on May 24th. Joe also announced that he has taken possession of the new refractor from D&G optical with plans for testing and installation to follow.

Treasurer: Dale T. gave an overview of monetary details of WAS account, which is described in detail in the current issue of the WASP newsletter as part of the Treasurer’s report. He mentioned that we presently have 105 members and plans to send out letters to those members from last year who have yet to renew.

Secretary: The minutes from last month’s board meeting and general meetings are in the latest issue of the WASP. A brief summary of the topics of discussion is presented there.

Outreach: Angelo provided a brief overview of both planned and potential outreach events that are coming up. Scheduled events will be shown in the upcoming events list in the WASP and on the WAS website. Angelo mentioned that there are three events planned for May. Also he had mentioned that there would be volunteers needed for Astronomy Day.

Publication: Bob announced that the latest issue of the WASP has been released. He mentioned that there was no update regarding the concept of a trifold brochure for increasing the organization’s exposure to educators.

Old Business: There is as of yet no official word from the IRS on the start of 501(c)(3) status. There have been no developments on the Dob shed Eagle Scout project since the time of the last meeting. The topics of Banquet planning and the selection of a banquet speaker were revisited. After some discussion, it was resolved that Harlan Neville, former mission controller for the Apollo program, would be provisionally selected as the banquet speaker. The topic of the potential creation of a memorial award in the name of Bob Watt was discussed, but ultimately tabled for a future meeting.

New Business: Joe announced that the scope had arrived from D&G optical and presented a tentative schedule for the decommissioning of the old scope and the installation of the new scope. His plan was for the old scope to remain in place for Astronomy Day, but for the new scope to be ready for use in a temporary cradle in time for the May 24th Stargate open house. The pier modifications and new mount would then be placed sometime in the following two weeks. Joe explained the need for some additional mounting hardware required for the proper refitting of the new telescope to the donated mount. A motion was made by Dale T., seconded by Bob T., and unanimously voted in favor for allocating an amount not to exceed $700 for the needed parts. The final light (May 10th) and retirement of the old scope would be announced at the Cranbrook meeting. The old Cassegrain is planned to be stored in the Dob shed until star-testing of the new scope proves satisfactory. Discussion of the fate of the old scope following decommissioning was tabled to a future meeting.

(Continued on page 24)
The board meeting was closed at 7:30pm.

WAS General Meeting
Cranbrook, May 5, 2014

The meeting was started around 7:30pm with approximately 60 people in attendance

Officer reports:

President: Jonathan opened the meeting and introduced himself. The attendees announced their names and first time visitors were welcomed. The final light of the Stargate Cassegrain telescope was announced for the night of May 10th, coinciding with the Astronomy Day festivities at the observatory. The board members were then called upon and asked in turn to report.

1st Vice President: The upcoming speaker schedule was announced for the next two meetings. Attendees were asked to contact Dale P. if they are interested in providing a future presentation to the WAS.

2nd Vice President: The schedule for the decommissioning of the old telescope and the planned stages for testing and installation of the new Kalinowski refractor were announced. The new scope will be available in its temporary mount by May 24th, and will be permanently mounted probably no later than early June.

Treasurer: The financial situation and membership totals were reviewed in brief by Dale T. Details can be found in the latest issue of the WASP.

Secretary: Chuck announced that the minutes to the board meeting and general meetings would be available in the upcoming WASP.

Outreach: The Astronomy Day special open house at Stargate was announced for May 10th from 6:30pm until late. Angelo asked for volunteers to attend and bring telescopes.

Publication: Bob announced the release of the latest WASP issue and highlighted some of the features contained therein.

Special Interest Group reports:

Solar: The latest solar activity was described by Marty. There was some activity to report, including some sunspots. Solar maximum has not yet been reached. Cranbrook hosts the solar observing group on the first Sunday of every month.

Discussion Group: Jonathan announced that the group meets at Gary Gathen’s house on the fourth Thursday of each month, starting at 8:00pm.

Hands On: Riyad announced that he will be bringing a list of double stars to future Stargate open houses for those interested in exploring numerous objects of this type. This list is available from him upon request.

Astronomical League: The membership drive for AL renewal is in full swing. Membership is $7.50 for WAS members (normally $30 for non-members) for one full year of membership, which includes a subscription to Reflector magazine, participation in observing programs, and much more. The deadline for membership is June 19th, so please don’t delay. Contact Chuck at alcor@warrenastro.org for more information.

History: Dale T. presented some information from an old 1974 issue of the WASP detailing the AL national convention, which was held in Michigan that year. The cover of the issue described was displayed for the audience.

GLAAC: Diane highlighted some of the recent planning and discussions taking place within the GLAAC organization, including some news on the planning of this year’s Astronomy at the Beach event at Kensington MetroPark.

Observing reports: Jonathan announced the potential meteor storm predicted for late May. He also gave an observing report with Diane of their recent trip to Arizona, including observations of Omega Centauri. Ken reported mostly clouds from the Cadillac observing session, but did mention that a three-hour clearing had provided some viewing opportunities. Jeff McCloud described the thrill of showing Jupiter and Saturn to first time viewers from a suburban site.

Presentation (“In the News”): Ken Bertin provided his biweekly insightful look at the latest developments in astronomy, astrophysics, and space exploration.

(Continued on page 25)
(Continued from page 24)

Presentation (short talk): Gary Ross presented an amusing account of his recent pilgrimage to the headquarters of the Royal Astronomical Society of Canada, with all of the digressions, anecdotal asides, and poignant storytelling that are his trademark.

Presentation (long talk): Ken Bertin provided a detailed account of the life and times of Charles Messier. Ken has established a reputation within the WAS for providing comprehensive historical presentations of both famous and infamous—as well as occasionally underappreciated—scientists who have made substantial contributions to the understanding of our universe. This talk provided a timeline of discovery as well as an in depth commentary on the legendary figure for whom many of the most intriguing astronomical objects are named.

The meeting was ended around 10:00pm.

WAS General Meeting
Macomb, May 15, 2014

The meeting was started at 7:30pm.

Officer reports:

President: Jonathan opened the meeting and introduced himself. The attendees announced their names and first time visitors were welcomed. Jonathan announced the key items from each officer’s written report.

1st Vice President: The upcoming speaker schedule was announced and those interested in presenting in the future were asked to contact Dale P.

2nd Vice President: The D&G refractor has been received and will be soon star tested upon the completion of a temporary mounting set up.

Treasurer: The financial situation was reviewed in brief. Details can be found in the latest issue of the WASP.

Secretary: Minutes for all meetings can be found in the WASP.

Outreach: Upcoming events were described in brief. A full schedule can be found in the latest issue of the WASP. Volunteers or those seeking more information should contact Angelo.

Publication Officer: Members interested in writing articles or submitting content for the WASP newsletter should discuss ideas with Bob Trembley.

Presentation (“In the News”): Ken Bertin provided his biweekly insightful look at the latest developments in astronomy, astrophysics, and space exploration.

Presentation (long talk): Dave Bailey was the speaker for the evening, and his presentation was entitled, "Strangers in the Night - Close Encounters of the Stellar Kind". He discussed various types of stars in the Milky Way Galaxy and how close they may have come to the Solar System over its 4.5 billion year history. He also discussed how visible they would have been from the Earth. This included visibility of their planets and visibility of planetary nebulae.

The meeting was ended at 9:30pm.

Tune in to Captains Marty Kunz & Diane Hall for live radio every Wednesday night at 9:00pm ET.

http://astronomy.fm/space-pirates/
Observatory Viewing every Friday & Saturday evening at 7:30pm-10:00pm

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

Check out the telescope via a real-time webcam!

Acheson Planetarium Shows:

Friday/Saturday 7:00pm  Dinosaurs at Dusk  
8:00pm  Michigan Sky Tonight  
9:00pm  Secret Lives of Stars  

Saturday 10:30am  One World, One Sky: Big Bird’s Adventure  
11:30am  Dinosaurs at Dusk  

Saturday/Sunday 12:30pm  Young Stargazers Sky Journey  
1:30pm  Michigan Sky Tonight featuring Back to the Moon  
2:30pm  Dinosaurs at Dusk  

Saturday 3:30pm  Michigan Sky Tonight (Ages 6 & Above Only)
2014 VOLLBRECHT PLANETARIUM SPRING SHOWS

Planetarian: Cliff Jones - 248-559-3886, Cell: 313-770-7468

**June 4—A History of Time and the Universe— Summer Skies** — Eventually, all civilizations face the ultimate questions. Has the universe always been here? Did it start at one particular time and place? Will it come to an end or continue for forever? Discuss your idea as well as other theories. View the evening sky on the room darkened dome.

**Wednesday, 7:00 PM**

Each Hour and a half show offers: Q&A, lecture, star show, handouts and a door prize

Planetarium Phone: (248) 746-8880 - 19100 Filmore, Southfield, MI 48075

**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

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

*Southfield P&R Dept., 26000 Evergreen Rd. Southfield, MI 48037, (248) 796-4620

**Free Public Planetarium Shows:** 3 Friday evenings per month, 7:00 PM

Note: *Reservation not required*. Please arrive 15-20 minutes early to ensure a seat.

**Free Science Under the Dome**—A free monthly science lecture series

Note; *RSVP is required for the lecture*

**K-12 schools welcome!**

Website: [http://planetarium.wayne.edu/](http://planetarium.wayne.edu/)


WSU Planetarium, Physics & Astronomy Department, Wayne State University
Detroit, Michigan 48201 Phone: 313-577-2107 Email: [outreach@physics.wayne.edu](mailto:outreach@physics.wayne.edu)
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

**NOTE: Membership Deadline: June 19**
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.


### Kensington Astronomy at the Beach

Each September, GLAAC hosts Michigan’s largest **free** astronomy event: Kensington Astronomy at the Beach, at Kensington Metropark. Telescopes as far as the eye can see, presentations, special guests, vendors, inflatable planetarium, educational games for children, astronomers for students and teachers to talk with, and more!

### GLAAC Club / 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>
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.

STAR-B-QUE

Want really down home, low rent fun? Try the annual Star-B-Que of the Grand Rapids Astronomical Association at the James C. Veen Observatory.

22nd June -- Solstice!

Sleeping arrangements from humble to wretched at Kissing Rock Farm, walking distance away: FREE. If it is good enough for Bailey, it is good enough for you!

Contact Gary Ross for more info: rmg@wmis.net

Seven Ponds Open Invitation

WAS members are invited to The Seven Ponds Astronomy Club monthly meetings. Next meeting: Saturday, January 4, 7:00 PM

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

Images by Society member Carl Randall, May 30, 2014