Treasure Hunting at 42 Degrees

For a few weeks beginning in the middle of March, astronomers have a chance to observe all 110 objects in the Messier calendar in the span of one night. Astronomers at the latitude of, say, 25 degrees north, that is. Those of us up around, say, the 43rd parallel are out of luck as far as a full marathon goes. (Those who overwinter at 25N and below, we know you who you are!)

Even if Michiganders are shut out of the full sweep of Messier action, the Warren Astronomical Society board of officers has vowed this year to encourage all our members to go a-questing for Messier objects and take part in other celestial treasure hunts. Outreach Director Bob Trembley has compiled resources to help members achieve observing awards from the Astronomical League. If you’re an AL member and you’re interested in the Messier Observing award, Messier Binocular award, or the Lunar Observing award, Bob has the information you need and is ready to share.

Also honor of the Messier Marathon, Observatory Chairman Jeff MacLeod is planning a Messier theme for March’s Open House event at Stargate. Even if we can’t make it to 110 objects, we’re going to see some of the catalogue’s finest through the Big Dob and the Kalinowski-Khula Refractor. Larry Kalinowski, namesake of Stargate’s mighty refractor, organized and judged Messier hunts for the W.A.S. and my husband Jonathan Kade and I were fortunate to participate in some of the last contests Larry presided over (and let me tell you sometime about the frustration of viewing M79 in spring). The board this year hopes to resurrect a true Messier contest, complete with prizes; March weather is too capricious so the contest will be held at this year’s W.A.S. picnic.

(Continued on page 3)
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

Mar. 7 .......... Cranbrook ......... Dale Thieme
Mar. 17 ........ Macomb ........... John Horton
Apr. 4 .......... Cranbrook .......... Jonathan Kade & Diane Hall
Apr. 21 ........ Macomb ............ Dale Partin
5/2/16........... Cranbrook ......... Ralph DeCew
5/19/16........... Macomb .......... Bob Berta

Paper supplies and cups are supplied by the club, volunteers are reimbursed up to $25 for the snacks.

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

Discussion Group Meeting

Grab some snacks, come on over, and talk

The WAS Discussion Group meetings take place at the home of Gary and Patty Gathen, from 8 -11 PM, on the fourth Thursday of the month, from January-October. Different dates are scheduled for November and December due to the holidays. The Gathens live at 21 Elm Park Blvd. in Pleasant Ridge—three blocks south of 1-696, about half a block west of Woodward Ave.

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

Saw a Fireball?

Report it to the American Meteor Society!

www.amsmeteors.org/members/fireball/report-a-fireball

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Tune in to Captains Marty Kunz & Diane Hall for live radio Wednesday nights at 9:00 pm ET.
The very end of March offers another “treasure hunt” for the visual observer, one that requires a passport as well as a tank of gas. Go south across the Detroit River and get on Highway 3, which takes you south-east to the town of Leamington, Ontario. That’ll be the gateway to Point Pelee National Park, the southernmost point in Canada and the home of a dark-sky preserve there at the 42nd parallel. The “tip” of Canada points to a blank space between the cities of Sandusky and Cleveland, and in the darkness over Lake Erie you’ll be able to see objects washed out by the Detroit/Ann Arbor/Toledo skyglow from even “dark” skies in the Metro area. It’s even possible—just—to see the greatest of globular clusters, Omega Centauri, from Canadian soil.

The catch is, the park closes at dark, so you’ll need to get advance permission to pull this caper off. Our Canadian friends at the Royal Astronomical Society of Canada, Windsor Centre, have arranged for March 26th to be their official Dark Sky Night at the park, so this might be your chance to pull off a rare astronomical feat! Check out the Windsor chapter of RASC for additional details... and for verification that yes, seeing Om Cent from Canada is indeed possible.

Clear Skies and Happy Hunting!

-Diane Hall, President

| Astronomical Events for March 2016 |
|---|---|---|
| Day | EST (h:m) | Event |
| 1 | 18:11 | LAST QUARTER MOON |
| 2 | 1:53 | Saturn 3.6°S of Moon |
| 7 | 5:54 | Venus 3.5°S of Moon |
| 8 | 5:00 | Jupiter at Opposition |
| 8 | 20:54 | NEW MOON |
| 8 | 20:57 | Total Solar Eclipse; mag=1.045 |
| 9 | 1:31 | Moon at Descending Node |
| 10 | 2:02 | Moon at Perigee: 359509 km |
| 14 | 8:44 | Aldebaran 0.3°S of Moon |
| 15 | 12:03 | FIRST QUARTER MOON |
| 19 | 23:31 | Vernal Equinox |
| 20 | 9:00 | Venus at Aphelion |
| 20 | 14:05 | Regulus 2.5°N of Moon |
| 21 | 22:57 | Jupiter 2.1°N of Moon |
| 22 | 7:59 | Moon at Ascending Node |
| 23 | 6:47 | Pen. Lunar Eclipse; mag=0.775 |
| 23 | 7:01 | FULL MOON |
| 23 | 15:00 | Mercury at Superior Conjunction |
| 24 | 20:50 | Spica 5.1°S of Moon |
| 25 | 9:16 | Moon at Apogee: 406125 km |
| 28 | 13:45 | Mars 4.2°S of Moon |
| 29 | 9:58 | Saturn 3.5°S of Moon |
| 31 | 10:17 | LAST QUARTER MOON |

If Daylight Saving Time is in effect, add one hour to the times listed.

March 1984

How fortuitous that, on the month following Dr. Jerry Dunifer's presentation at the Macomb meeting - featuring among other attractions, the Space shuttle “Columbia”, we would have the cover featuring the same, landing from one of its missions. This particular issue features some hardware discussions in “DOBSONIAN XTRAS” by Brian Shumaker who also writes about observing experiences (and more hardware) in “My Son the Astronomer”. Kenneth Wilson treats us to a formula in “THE CALCULATING ASTRONOMER”. And finally (Jon Blum will like this), Ken Strom fills us in on what astronomy is like in Hawaii.

-Dale Thieme,
Chief scanner

Letters

Letter to the Editor or...
Flack From the Fools.

In the January number of the W.A.S.P. is Chuck Dezelah’s continuing contribution regarding deep sky objects, vide N.G.C. 2683. Whilst still reeling from Ken Bertin’s enormity at Cranbrook, to wit, putting on screen a picture of a sort of humanoid -- which no evolutionary process could generate -- to illustrate something-or-other about extraterrestrial life, one encounters:

The "UFO galaxy" (sic). I read Harlow Shapley’s Galaxies, 1st ed., during the New Frontier. Nowhere were names like that drivel found! Where is this rot coming from? Drugs on our youth? Those dunged (unionised) school teachers? Excursions into scientifiction lack dignity, as Hugo Gernsbeck would say. The Warren Astronomical Society are savants, in addition to a penumbra of stumblebums, so get a grip.

Back to 2683. I saw this spiral galaxy years ago at the Veen Observatory. Yes, she is big ‘un, but "electronic" observing assistance is hardly necessary. Just do a careful sweep north from Iota Cnc, assuming an aequatorial mount with or without slow motion controls. Flex shafts will suffice or one can just (gently) haul the tube by hand.

By the Grace of God, G. M. Ross
The seeing was only mediocre but the libration was about the strongest for this portion of the moon for this year. This effect allows us to see about 10% more of the moon than if it didn't wobble back and forth. This image concentrates on the 90 km diameter crater Hayn shown here just below the nameplate with the sharp dark shadow against the crater wall. At the opposite libration it is over the limb and completely invisible from our nearside view but in this image the maximum libration point is right at the limb near Hayn. I had never imaged this crater before so it was on the list even if the seeing was not the best. The bright crater near the bottom with the off-center ray system is the 32km Thales. Immediately to its right, barely seen in this high sun lighting is the shallow 56km Strabo. The aforementioned ray system is quite curious. Though the crater Thales is bright the rays appear to radiate from a point just outside its north wall!

The two flat bottomed craters at the top of this image are Cusanus (56km) right, and Petermann (75km) left. Straight down from these two is a large, barely discernible 99km crater, Arnold. It has a small clear crater on its northern floor.

The two images that make up this montage were each made from 500 frames from 3000 frame AVIs using Registax6. The images were further processed with GIMP and IrfanView and assembled with AutoStitch.

-Rik Hill

Seven Ponds Open Invitation

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

More information about upcoming meetings, maps to Seven Ponds Nature Center, etc. are available at www.sevenpondsac.com

Please let John Lines know if you might attend so that appropriate plans can be made: (248) 969-2790, or jelines@yahoo.com
NGC 3115 is an edge-on spiral galaxy in the constellation Sextans. It is often associated with a nickname that gets used for other, similarly shaped objects of its type: the Spindle Galaxy. NGC 3115 has an integrated apparent magnitude of 8.9, angular dimensions of approximately 7' x 3', and is about 32 million light years distant. Sources differ as to the object's classification on the Hubble Sequence, with some references listing it as an E6 elongated elliptical and others citing it as an S0 lenticular galaxy. Given the tapering edges and noticeable presence of a central bulge, the latter designation would seem to provide a more accurate description of its features. Regardless of any morphological controversy, NGC 3115 is an excellent target for springtime observers due to its relative brightness and fascinating characteristics.

Locating the Spindle Galaxy can be fairly challenging due to the lack of nearby stars suitable for star-hopping. However, finding the object's general neighborhood is not overly difficult, as it lies about 20° south of Regulus (α Leonis, mag. 1.4), about 9° east of Alphard (α Hydrae, mag. 2.0), and about 5° north-northwest of λ Hydrae (mag. 3.6). Once in the eyepiece, however, the object should be readily visible in telescopes of 8-inches or larger in aperture, although smaller instruments may reveal the galaxy when conditions are suitable. At lower magnifications (35-60x), the narrow elongated structure of the galaxy should be easily discernable. Higher magnifications (80-150x) should expose the bright extended galactic core, the central region of which may even appear rectangular in profile. The envelope of NGC 3115 narrows gradually towards the ends, giving the classic lens-shape that is typical of lenticular galaxies. Overall, the Spindle Galaxy provides enough of an attraction to make it well worth venturing out into the wet chill of a March night.

This column is a recurring feature written with the intention of introducing a new object each month that is visible from Stargate Observatory using a moderate-sized telescope typical of beginner and intermediate level amateur astronomers. In particular, special focus will be given to objects that are not among the common objects with which most observers are already familiar, but instead articles will mainly give attention to “hidden gems” or underappreciated attributes of the night sky.
March 7, 2016 Cranbrook Meeting Presentations

The Warren Astronomical Society will have two speakers at Cranbrook on Monday, March 7th.

Main Presentation

Doug Bock will give the full-length presentation, “Time Lapse Photography (techniques).” The presentation will cover the equipment Doug uses, and his methods for acquisition and rendering a time lapse movie.

About Doug Bock

1) Amateur astronomer since 1965.
2) Lifetime member of the WAS, since 1973
   • Past President
   • Past 1st VP
   • Past Editor
   • Past Web hosting for the club
   • Past Deep sky sub group chairman
   • Received the E. John Searles award in both 1980 and 1982
3) Lifetime member of the FAAC, since 1993
   • Past Web hosting for the club
4) Member of the Seven Ponds Astronomy Club
5) Past memberships:
   • Romeo Astronomy Club
     § VP
   • MSU Astronomy Club
     § Editor
   • LowBrow Astronomy Club
   • EMU Astronomy Club
6) One of the founders of GLAAC
   “Director” of the Northern Cross Observatory, and the Boon Hill Observatory.
   Past Chairman, and Vice Chairman of the Great Lakes Region of the Astronomical League, by default on the Board of the AL.
   He’s hosted 30 years of star parties at Boon Hill and 20 years at NCO.
   He’s primarily an observer, but has dabbled in Astro-Photography over the years.

Short Talk

Ken says: “We will discuss the big news items of 2015 including Ceres (Dawn mission), P67 comet (Rosetta Mission), Curiosity and of course Pluto (New Horizons), we will briefly mention the Messenger mission to Mercury and the Cassini mission to Saturn.”

Ken has been a member of the Warren Astronomical Society since the late 70s. He has held the office of VP and President. Ken enjoys observing solar eclipses, giving presentations on historical astronomers and giving a current “In the News” presentation at our meetings. In 2001, he was awarded the E. John Searles Award and in 2013 was presented with a lifetime membership in the Warren Astronomical Society.
At this month’s Macomb meeting, Stephen Uitti will be our featured presenter. His presentation is entitled Pluto.

Says Stephen, "The New Horizons spacecraft flew by Pluto in July of 2015. The data is expected to take a total of about 16 months to be transmitted back. However, most of the interesting data are here. Additionally, there is some interesting analysis and speculation.

Stephen ("Steve") Uitti ("Witty") holds a BS in Mechanical Engineering. He usually does something with computers for a living. He has been an active member of the WAS for about a decade and a half, has served in various officer roles, and participates in outreach. He has been an active member of the FAAC for seven years and a half, has served in various officer roles, and participates in outreach. He helps produce a free monthly astronomy TV show since 2009, Astronomy For Everyone, now on YouTube for over 40 hours of binge watching pleasure.

### Future Presentations

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<th>Presenter(s)</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 4</td>
<td>Cranbrook</td>
<td>Arun Kumar, Rebecca Blum</td>
<td>TBD (telescope building) Space Camp</td>
</tr>
<tr>
<td>April 21</td>
<td>Macomb</td>
<td>Members</td>
<td>Short Talk Anthology</td>
</tr>
<tr>
<td>May 2</td>
<td>Cranbrook</td>
<td>Dr. Fred Adams</td>
<td>The Effects of Clusters on Forming Planetary Systems and Constraints on the Birth Aggregate of our Solar System.</td>
</tr>
<tr>
<td>May 19</td>
<td>Macomb</td>
<td>Students (with John Dumar)</td>
<td>Kepler's Third Law and the Galilean Moons</td>
</tr>
</tbody>
</table>

### Young Astronomers Department

At the Cranbrook meeting of the Warren Astronomical Society on April 4, 2016, the short talk will be presented by Rebecca Blum. Rebecca is 14 years old and has been interested in astronomy her whole life. She has been looking through her grandfather Jon Blum’s telescope since she was 2, has attended Astronomy At The Beach at Kensington every year since she was 8, and got her own Celestron SCT last year. She wants to go to the Moon and Mars, so she attended Space Camp in Huntsville, Alabama, the past two summers. Rebecca’s presentation will describe her experiences at Space Camp.
W.A.S. Astrophotography

M81- Galaxy
by Bill Beers 5/7/13
using 80mm f/7.5, Meade DSI III, 15 x 11 min

Photo credit, both: Bill Beers

Jupiter over the Moon
Punta Cana, Dominican Republic 1/27/16
Photo by Bill Beers
NGC 188: Open cluster in Cepheus

Photo by Ralph DeCew, May 7, 2015
Orion 80ED refractor, Canon Rebel Xsi
19 x 30 seconds

The open star cluster NGC188, also known as Caldwell 1, is located in a region of the sky that receives little attention by not only casual observers, but amateur astronomers in general. There are no bright stars or other easy objects around, and the constellation itself is made up primarily of third magnitude stars that get lost in the light pollution and haze, or are just out-dazzled by flashier stellar areas at a dark sky site.

NGC188 was discovered by John Herschel on November 3, 1831. It is the most northerly star cluster and has a claim to fame as being the very oldest visible from Earth. The best estimates today place its age at around 5 billion years. Most open clusters have long been dispersed by then. It is located only slightly more than 4 degrees from Polaris, which should help make finding it easier; and being circumpolar, is visible in our sky all year around. It has a very low surface brightness however which makes it a little difficult, despite being listed as a magnitude 8.1 object. Some claim to have seen it with 7x50 or 10x50 binoculars in a very dark sky. In the 80mm scope I used to make the photo, I saw it as a small, faint, soft, hazy glow with little resolution. A few times, the longer I watched, I believed I saw an occasional star twin-
kle here and there but wasn’t sure they were really part of the cluster.

The cluster is comprised mostly of evolved red giant and yellow giant stars. Its motion through space rarely takes it across the higher density areas of the galactic plane, and this is thought to account for it retaining most of its stars, as well as its great age. The brightest members of the cluster are magnitude 12, but it has over 130 members that are of magnitude 17 or fainter. It is usually listed as being at a distance of 5000 light years or a little more, and a diameter of 33 light years.

Another very interesting fact about NGC188 is that it also contains a group of stars known as “blue stragglers”, at least 21 of them. These are old stars that appear much younger than they should be. They burn hot and blue, and astronomers only recently have begun to make the crucial observations necessary to understand them. Basically, a blue straggler is eating up the fuel from a neighboring star, which allows it to live longer while stripping its companion bare and leaving behind a white dwarf core. It has been through the study of these companion stars that scientists are learning about the blue stragglers, although the companions themselves have not been directly observed.

-Ralph DeCew
March 2016

Notable Sky Happenings

March 1 - 7
The Moon is above and to the left of Saturn in the

March 8 - 14
The Moon is above and to the left of Jupiter in the

March 15 - 21
March equinox occurs at 12:30 am EDT on

March 22 - 31
The Moon is above and right of Saturn on the 29th.

Also Showing

Star Tour: Big Bird's Adventure

One World, One Sky: Big Bird's Adventure

From Earth to the Universe

Also Showing

Western Hemisphere

Central America

South America

North America

East Asia

Europe

Africa

Middle East

India

Australia

South Pacific

Antarctica

If this page

translations with a few changes

the Moon can move to the

the solar system defined by

the previous

the reference

the ecliptic

What is this?

When Erinos friend, the Moon, visits from China, Big Bird, Erino and Hu Fu

When Erinos friend the Moon, visits from China, Big Bird, Erino and Hu Fu

For astronomy information visit http://science.cranbrook.edu
**Observatory Viewing** every Friday & Saturday evening at 7:30 pm-10:00 pm

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

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This schedule is valid January 8 - July 3,

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>Saturday</td>
<td>One World, One Sky: Big Bird’s Adventure</td>
</tr>
<tr>
<td>11:30am</td>
<td></td>
</tr>
<tr>
<td>Saturday/Sunday</td>
<td>From Earth to the Universe</td>
</tr>
<tr>
<td>12:30pm</td>
<td></td>
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<tr>
<td>Saturday/Sunday</td>
<td>Michigan Sky Tonight</td>
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<tr>
<td>1:30pm</td>
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<tr>
<td>Saturday/Sunday</td>
<td>Young Stargazers Sky Journey</td>
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<tr>
<td>2:30pm</td>
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<tr>
<td>Saturday</td>
<td>Michigan Sky Tonight</td>
</tr>
<tr>
<td>3:30pm</td>
<td>Ages 6 &amp; Above Only</td>
</tr>
<tr>
<td>First Friday Only</td>
<td>Michigan Sky Tonight</td>
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<tr>
<td>6:00pm</td>
<td></td>
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<tr>
<td>Friday/Saturday</td>
<td>From Earth to the Universe</td>
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<tr>
<td>7:00pm</td>
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<tr>
<td>Friday/Saturday</td>
<td>Michigan Sky Tonight</td>
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<tr>
<td>8:00pm</td>
<td></td>
</tr>
<tr>
<td>Friday/Saturday</td>
<td>SpacePark360</td>
</tr>
<tr>
<td>9:00pm</td>
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</tbody>
</table>
Astronomy
Night!

Endeavour Middle School

March 18th, 6:30 pm
Free, and open to the public!

Rotating Lectures every 20 minutes—starting at 7:00 PM
- The Sun—by Bob Trembley
- Size and Distance in the Universe—by Ken Bertin
- Meteorites—by Connie Martin Trembley

Telescope Observing of the Moon and Jupiter—starting at 8:30 PM
Members of the Warren Astronomical Society will have several different types of telescopes setup to view the Moon and Jupiter. Here’s hoping for clear skies!

Walk the Solar System
See how far apart objects in space really are! Learn about the Sun, planets, asteroids, comets and more!

Raffle:
1st prize: An Orion tabletop reflector telescope, and a copy of Turn Left at Orion.
2nd Prize: A Bushnell binocular, and a copy of Turn Left at Orion.
3rd Prize: A hardcover book filled with space images from the Hubble Space Telescope

Tickets: $1. You do not need to be present to win.

Astronomy Videos and Images
Astronomy videos will be running on several library computers, showing recent images from current space missions, and stunning imagery from space!

Computer Software
Library computers will be running hands-on astronomy software—many you can download for free!
- Celestia—Space simulator
- Stellarium—Planetarium program
- Worldwide Telescope—Virtual telescope for your PC

Ask an Astronomer
Members of the Warren Astronomical Society will answer your questions about space and astronomy.
Stargate Observatory
Monthly Free Astronomy Open House and Star Party

4th Saturday of every month!
Mar. 26, Apr. 23, May 28

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

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.
February Open-House:

The February Open-house was held on Saturday the 27th, The Observatory was opened at 5:00pm under a thin layer of clouds. Club members, first timers and the general public received small telescope lessons from Ken Bertin as Riyad Matti re-aligned the Kalinowski-Khula telescope and Jonathan Kade and I rolled out the big Dob. As the night got colder the sky cleared quite substantially and objects like M42, the double cluster, Jupiter & its good red spot where all observed before the final members bowed out around 11pm. Attendance for the evening was around 40. Most notable of the night’s events was the generous donation of a very fine, Explorer Scientific eyepiece to Stargate by Pat Brown.

March Open-house:

The regular Open-house for March is scheduled for Saturday the 26th, three days following the full Moon, rising at 11pm. Sunset is at 7:50pm and astronomical twilight starts at 9:25pm. Arrive just before astronomical twilight (or sooner if you plan to set up a scope or do solar observing)

A friendly reminder to be courteous if you arrive after dark, dim your headlights upon entry to the park, and no white light flashlights please.

If you are setting up a large scope or have a lot of equipment to set up then you are permitted to park on the observing field preferably with your vehicle lights pointed away from the observatory and other telescopes.

Observatory Update:

As mentioned above Pat Brown has donated a high end, Explorer Scientific 100° 20mm (3lb!) eyepiece to Stargate, saying ”more people will look through it here” Jeff M took possession of the eyepiece on Stargate’s behalf after almost 1.26 seconds of convincing! Thanks again to Pat Brown for your generosity, people such as yourself are the reason Stargate is the first rate facility that it is.

Jeff MacLeod
2nd VP – Observatory

For Sale

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

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

Dale is asking $3200 OBO for everything! Contact him Through Facebook, via the link above.
Dob Shed Sale

Our Dob shed is bursting at the seams with equipment that don’t get used because we can’t get to them. The board is refurbishing other scopes for loaning out, and clearing out what won’t get requested for a loan out. We want our own members to have first chance at getting these scopes and mounts before offering them up at the FAAC Swap Meet, March 19th. Asking price negotiable.

The Telescopes

On the auction block is a nice 5" SCT (assuming f/10) with carrying case. Joe says he has not looked through this scope. Asking $250.00

On the auction block is this interesting and untested 127mm (?) (f/???). This scope has not been visually tested. Asking $200.

On the auction block is this average homemade 80mm achromatic (f/15) with 1-1/4 focuser. Views are average. Asking $100.

On the auction block is a nice 5" SCT (assuming f/10) with carrying case. Joe says he has not looked through this scope. Asking $250.00
On the auction block is a Meade 127mm Mak-Cass (f/15). The views in this scope are very nice once it cools down. Asking $250.00

Mounts

On the auction block is an average 10” Meade SCT. Asking $500.00

On the auction block is a clean light-duty GEM by Meade. Asking $50.00

On the auction block is a used Sears 60mm f/15 refractor and GEM (in wooden case.) Have not looked through it, optical quality unknown. Asking $75.00

On the auction block is a clean medium-duty GEM by Meade. Asking $75.00

On the auction block is a clean medium-duty GEM by Vixen?? Asking $75.00

On the auction block is a Meade 127mm Mak-Cass (f/15). The views in this scope are very nice once it cools down. Asking $250.00

Mounts

On the auction block is a clean medium-duty GEM by Vixen?? Asking $75.00
W.A.S. Outreach

**Saturday the 6th**: Boy scout troop 1539 at Star-gate

Jeff MacLeod, Parker Huellmantel, Bob Trembley, Bob Berta, and Ken Bertin had dinner with the around 18 scouts and gave several astronomy presentations in the nice WARM cabin just down the road from the observatory. Afterwards, we walked over to the observatory under cloudy skies, and gave them a tour, and chatted about the various things they might have seen.

**Tuesday the 16th**: Rose Kidd Elementary in Sterling Heights

Bob Berta, Lee Hartwell, Ken Bertin and Bob Trembley gave several astronomy presentations to 2 groups of around 80 elementary students. Bob Berta, Ken and Lee returned on Thursday the 18th for a repeat performance.

**Friday the 26th**: Tiger Cub Workshop at Cranbrook

Jeff MacLeod and Parker Huellmantel helped 60+ Tiger Cub scouts and their parents learn how to look through a telescope and make observations.

**Saturday the 27th**: Stargate Open House

Our monthly Star Party and Open House at Star-gate Observatory once again had a large group of attendees. Ken Bertin gave a presentation, and although the sky was partly cloudy, but that didn’t prevent viewing of the Orion nebula, Castor, Jupiter, and other objects.

**In the Future:**

**Friday March 18th**: Astronomy Night at Endeavour Middle School

Plans for an Astronomy Night at Connie Trembley’s school are continuing to develop. On the 28th and 29th, we were at her school setting up a display case with photos, the raffle prizes, and my meteorites. On the 27th, we printed out a BUNCH of posters and laminated them at the MISD. The event will be open the event up to the public; I’ve sent info to a couple local newspapers, and flyers are going home to all the students in Connie’s district. This has the potential to be a very large event.

(Continued on page 19)
We’re going to have:

· 3 20-minute lectures, given 3 times, so groups can rotate through them, by Bob and Connie, and Ken Bertin.
· Projectors and computers showing looping astronomy videos.
· A walk the solar system down one long hallway.
· Library computers will be running astronomy software: NASA Eyes on the Solar System, Celestia, Stellarium, Universe Sandbox, and Worldwide Telescope.

- Images and posters galore!
- Telescope observing after dark.
- A raffle, with some REALLY NICE prizes:

1ˢᵗ: An Orion telescope (and a copy of Turn Left at Orion)

2ⁿᵈ: A Bushnell binocular (and a copy of Turn Left at Orion)

3ʳᵈ: A huge hardcover book with Hubble images

**Saturday March 26ᵗʰ:** Will be our monthly Star Party and Open House at Stargate Observatory

**Friday April 15ᵗʰ:** MSU is hosting their 2016 Science Festival – part of this festival is the first ever statewide Astronomy Night (SWAN). Planetariums and observatories across the Michigan are coordinating events; Stargate is no exception! We’ll let you know what we’re doing as plans develop.

-Bob Trembley, Outreach Coordinator
**Meeting Minutes**

**WAS BOARD MEETING - MINUTES**

**FEB. 1, 2016**

**Board members present:** Diane Hall, Ralph De-Cew, Jeff MacLeod, Joe Tocco, Bob Trembley, Dale Thieme, Dennis David, Bob Berta

**President:** General issues, no new business.

**1st Vice Present:** Speaker presentations status

**2nd Vice Present:** Stargate Status / issues - legacy scopes require special attention. Additional discussion to follow-up.

**Treasurer:** Joe Tocco reported that we currently have 65 members, of which 13 are family memberships. We took in $679.99 and spent $37.97. We have $18,198.44 in the bank and $231.83 in cash, totaling $19,061.27 as of 2/29/2016. Full details posted in the WASP

**Secretary:** Continuing to workup Jan. and Feb. reports for posting in next WASP.

**Outreach Coordinator:** Bob brought up new business cards issue, further discussions to follow. Boy Scouts / STEM program incorporation

(Continued on page 21)
(Continued from page 20)

approval motion made and seconded.

**Publications:** FEBRUARY Issue almost ready for Prime Time.

**Old Business:** Macomb meeting room additional space requirement discussed again without final determination. This will require more consideration and ideas.

**New Business:** Ed Bacon discussion on his recent class regarding “Group Boards - Nonprofit Leadership”

Board Adjournment - motion made and passed at: 7:30

**WAS GENERAL MEETING**

Cranbrook, February 1, 2016

Meeting Began at 7:30, 49 people in attendance, 5 New

**President:** General announcements, officer reports for general membership requested and given (see Board reports for details).

**In The News:** Ken Bertin made regular presentation.

**Presentation (Short Talk):** Jonathan Kade gave presentation on “Missions to Venus”

**Presentation (Long Talk):** Professor David Gerdes of the University of Michigan gave the feature presentation, “The Coolest Place in the Solar System: New Trans-Neptunian Worlds from the Dark Energy Survey.” The presentation was based on original research performed by Dr. Gerdes and his students.

Meeting ended at 9:30pm

**WAS MACOMB MEETING MINUTES**

**FEB. 18, 2016**

**Board members present:** Ralph D, Jeff M, Joe T, Dale T, Dennis D,...Diane H.

**President:** Not available for meeting start. General notices after arrival. Snack reimbursement up to $25.

**1st Vice Present:** Discussed speakers and presentations status and again asked for any new or potential possibilities to help fill in the schedule.

**2nd Vice Present:** General info.

**Treasurer:** Brief status recap. Full details are posted in the WASP.

**Secretary:** Continuing to work out new position duties. Previous minutes for this year will be posted in the WASP ASAP.

**Publications:** Dale Thieme reports that the February WASP is still online.

**In the News:** Ken Bertin gave short report on LIGO announcement.

**Presentation:** Jerry Dunifer gave presentation on his latest Large Telescope Site visits.

Attendance: 35

Meeting Adjourned at: 9:35

-Dennis David,
Secretary

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**W.A.S.P. Photo and Article Submissions**

We’d like to see your photos and articles in the W.A.S.P.

Your contribution is ESSENTIAL! — This is YOUR publication!

Send items to: publications@warrenastro.org

Documents can be submitted in Microsoft Word (.doc or .docx), Open Office (.ods), or Text (.txt) formats, or put into the body of an email. Photos can be embedded in the document or attached to the email and should be under 2MB in size. Please include a caption for your photos, along with with dates taken, and the way you’d like your name to appear.
GLAAC is an association of amateur astronomy clubs in Southeastern Michigan who have banded together to provide enjoyable, family-oriented activities that focus on astronomy and space sciences.


GLAAC Club and Society Meeting Times

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

GLAAC Club and Society Newsletters

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

WAS Member Websites

Jon Blum:  [MauiHawaii.org](http://www.mauihawaii.org)
Bob Trembley:  [Vatican Observatory Foundation Blog](http://www.vaticanobservatory.org)
Bill Beers:  [Sirius Astro Products](http://www.siriusastro.com)
Jon Blum:  [A Life Of Entropy](http://www.entropyprojects.com)
2016 VOLLBRECHT PLANETARIUM WINTER SHOWS

Planetarian: Cliff Jones

1. Jan. 13 - Southfield’s Sky Dome: Look up! What can we see? Let’s explore star patterns of the night sky (Constellations). Explore the Strange motions of the Moon and Planets against the night sky. Find our way by Star Hopping. How to use popular Apps, star maps and planispheres to find our way through the night sky.

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

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

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

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

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

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

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

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

Web: www.vollbrechtplanetarium.com  Planetarium Phone: (248) 746-8880

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

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

Ask about our Private and School Shows.
2016 VOLLBRECHT PLANETARIUM SPRING SHOWS

Planetarian: Mike Best
Cell: 734-968-3496
Web: starmikebest@gmail.com
Planetarium: 248-746-8880 www.vollbrechtplanetarium.com

Wednesday Evenings – 7:00 p.m. to 8:30 p.m.

1. 4/13 Telescopes & Binoculars: What telescope and binocular is right for you? How much do they cost? What will you be able to see and not see with them? What are the pros and cons of buying a used one? Where do you buy them? View stars on the dome. All your questions will be answered.

2. 4/20 Birth, Life and Death of STARS: Stars are born, live out their lives and die. They are found alone; in pairs and groupings; in various colors, shapes, and sizes, and die one of three ways. More than 2,000 stars have planets. There are more planets than stars. View stars on the dome. All your questions will be answered.

3. 4/27 Birth, Life and Death of the UNIVERSE: Every culture asked: Has the universe always been here? Did it start at any one particular time and place? Will it expand forever? Will it stop and then remain in a static state? Will it fall back on itself? Are there parallel or multiple universes? View stars on the dome. All your questions will be answered.

4. 5/4 Mercury, Venus, Mars, Asteroids and Meteors: How are planets formed? Examine the four rocky planets. When will the Moon be promoted to a planet? What are the benefits and dangers of asteroids and meteors? How and when will humans travel in the solar system? View stars on the dome. All your questions will be answered.

5. 5/11 Jupiter, Saturn, Uranus, Neptune, Comets & Dwarf Planets: How do the large gas giant planets differ from the inner rocky planets? Where do comets come from? Are they the source of Earth’s water? Why is Pluto a dwarf planet? How did Jupiter shape the solar system? View stars on the dome. All your questions will be answered.

6. 5/18 Nebulae, Aurorae & Extraterrestrials: Nebulae are the most beautiful objects in the sky. They’re found in three types and colors. Where do you find them in the night sky? What are Northern and Southern lights (aurorae). Why do Jupiter and Saturn have them? Are we alone? View stars on the dome. All your questions will be answered.

7. 5/18 Nebulae, Aurorae & Extraterrestrials: Nebulae are the most beautiful objects in the sky. They’re found in three types and colors. Where do you find them in the night sky? What are Northern and Southern lights (aurorae). Why do Jupiter and Saturn have them? Are we alone? View stars on the dome. All your questions will be answered.

8. 5/25 Eclipses, Moon & Star Travel: Why do eclipses take place? How did they help Christopher Columbus? Why were two Chinese astronomers executed? Will the Moon ever be designated as a double planet with Earth? What is a transit of the Sun? How will we travel to the stars? View stars on the dome. All questions answered.

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

Admission:

Prepaid at Parks and Recreation Dept. *
$5 for residents and $5.50 for non-residents
Eight-show series: $30 for residents
$40 for non-residents
*Southfield P&R Dept., 26000 Evergreen Rd.
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Ask about our Private and School Shows.
The Closest New Stars To Earth
By Ethan Siegel

When you think about the new stars forming in the Milky Way, you probably think of the giant star-forming regions like the Orion Nebula, containing thousands of new stars with light so bright it’s visible to the naked eye. At over 400 parsecs (1,300 light years) distant, it’s one of the most spectacular sights in the night sky, and the vast majority of the light from galaxies originates from nebulae like this one. But its great luminosity and relative proximity makes it easy to overlook the fact that there are a slew of much closer star-forming regions than the Orion Nebula; they’re just much, much fainter.

If you get a collapsing molecular cloud many hundreds of thousands (or more) times the mass of our sun, you’ll get a nebula like Orion. But if your cloud is only a few thousand times the sun’s mass, it’s going to be much fainter. In most instances, the clumps of matter within will grow slowly, the neutral matter will block more light than it reflects or emits, and only a tiny fraction of the stars that form—the most massive, brightest ones—will be visible at all. Between just 400 and 500 light years away are the closest such regions to Earth: the molecular clouds in the constellations of Chamaeleon and Corona Australis. Along with the Lupus molecular clouds (about 600 light years distant), these dark, light-blocking patches are virtually unknown to most sky watchers in the northern hemisphere, as they’re all southern hemisphere objects.

In visible light, these clouds appear predominantly as dark patches, obscuring and reddening the light of background stars. In the infrared, though, the gas glows brilliantly as it forms new stars inside. Combined near-infrared and visible light observations, such as those taken by the Hubble Space Telescope, can reveal the structure of the clouds as well as the young stars inside. In the Chameleon cloud, for example, there are between 200 and 300 new stars, including over 100 X-ray sources (between the Chamaeleon I and II clouds), approximately 50 T-Tauri stars and just a couple of massive, B-class stars. There’s a third dark, molecular cloud (Chamaeleon III) that has not yet formed any stars at all.

While the majority of new stars form in large molecular clouds, the closest new stars form in much smaller, more abundant ones. As we reach out to the most distant quasars and galaxies in the universe, remember that there are still star-forming mysteries to be solved right here in our own backyard.