In Memory of Blaine McCullough
1953-2009
By Rick Gossett

I met Blaine in 1997, while he was the club’s 2nd VP. I had been an amateur astronomer for many years, but I had never really thought about joining a club. We met at Stargate one evening, and I joined the club shortly thereafter.

Blaine’s interest in astronomy was all about observing. Many times he said “If I can’t see it or touch it, I’m not interested”. His passion for observing was contagious. It didn’t take long for us to become very good friends. And he broke more telescopes than anyone I had ever met, but that’s another story . . .

When Blaine started the telescope making subcommittee, I made sure to stop by every other week, and let him know that any telescope he touched was doomed to fail. On a cold November night in 2001, he asked me to meet him at Stargate and be one of the first in line to test his completed scope. When I looked into the eyepiece, he wiped the smile right off my face. The mirror was excel-
lently figured. Blaine suffered a stroke in 2003, and his health hindered his ability to observe, sometimes. I would invite him to join me with a scope, but our observing nights were becoming fewer and fewer. But he always surprised me. If he couldn’t remember the name of an object, he always remembered where it was.

In May, I observed with Blaine for the last time. He was too tired to pack his equipment, and bring it out, but he remembered how to use mine. We talked, and casually observed, just like old times. For me, it was a really enjoyable evening. And I will miss him at future star parties. The club has lost a good friend.

Ken Bertin wrote:
The sad news of the passing of past President Blaine McCollough has had a profound effect on us all. Blaine was a true gentleman who went through several years of adverse health issues but always managed to be upbeat and enthusiastic about life and certainly about astronomy to his very last day. We all miss his friendly smile and warm handshake.

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FEATURE ARTICLE OF THE MONTH

"DISCOVERY" OF A NEW CLASS OF BLACK HOLES
By Kurtis Williams, Professor Astronomy
http://aavsowritersbureau.blogspot.com/

When reading about scientific discoveries, it is always important to remember Professor Astronomy’s Discovery Law: The last person to discover something gets the credit.

Yesterday, a news story was released on a nice bit of research that is “the first solid evidence of a new class of medium-sized black holes.” Only many other astronomers who have claimed to discover medium-sized black holes would argue that they had already discovered the first solid evidence of such things. Now, let me make it clear. The authors do not claim in their paper to have discovered mid-sized black holes; that claim is made in the European Space Agency’s press release. And such hyped claims are often made by NASA and other US agencies, so ESA is not doing anything unusual. But this is not the first claim of a mid-sized black hole, and it won’t be the final word, either.

Illustration of the possible mid-sized black hole HLX-1. (blue star to the upper left hand side of the galactic bulge). HLX-1, located on the outskirts of the spiral galaxy ESO 243-49, is the strongest candidate to-date of intermediate-mass black holes.

An artist’s conception of how the black hole, called HLX-1, might look if our eyes could see both X-rays and optical light is at the top of this post. It looks like a photo, but it is just an illustration.

So, forgetting the cultural aspects of the story, let’s look at the science. Stories like this always raise the questions, "How can we see a black hole if light cannot escape it?" and "How do we know how big a black hole is?" These two questions are actually very closely related.
It is true that light cannot escape a black hole, if the light gets too close. How close is too close? For a black hole with the mass of the sun, the light would have to come within about 2 miles of the center of the black hole to be captured. The further away from the black hole you go, the more "normal" things are. If we replaced the sun by a black hole with a mass the same as the sun, the Earth and all the planets would orbit exactly the same as they do now, and we would still see all the stars in the heavens, except for those appearing the tiniest fraction of a degree away from the black hole in the sky.

So, stuff in orbit around a black hole will move in almost perfect ellipses around the black hole, just like it would around a normal star. They obey what we call "Kepler's Laws of Planetary Motion" first described by astronomer Johannes Kepler in the first decade of the 17th century. Kepler's Laws provided some of the first evidence for "small" black holes, those just a few times the mass of the sun. An example is the star system Cygnus X-1 (meaning the first X-ray source discovered in the constellation Cygnus). In that star system, a star with about 30 times the mass of the sun is losing some of its outer layers to a nearby unseen companion.

Now this invisible companion to Cygnus X-1 could have been a normal star, a white dwarf, a neutron star, or a black hole; all three would be impossible to see next to the very bright star. However, we can measure the movement of the bright star due to the gravitational pull of the companion star, much in the same way we find planets. The mass of the unseen companion is roughly nine times the mass of the sun. A normal star of that mass would be visible in optical light, but we don't see it. White dwarfs explode if they get bigger than 1.4 times the mass of the sun, so we know it's not a white dwarf. We aren't positive how big neutron stars can get before they collapse under their own gravity; but we know that limit is somewhere between 2 and 5 times the mass of the sun. So the invisible companion in Cygnus X-1 must be a black hole, and that black hole is about nine times the mass of the sun (but only about 30 miles in diameter!). Dozens of systems like Cygnus X-1 are known, and all the black holes have masses of a few times the mass of the sun to a few tens of solar masses.

Astronomers have also used Kepler's Laws in interpreting the movements of stars in the center of the Milky Way galaxy. They are able to determine that there must be something about 2 million times the mass of the sun in a volume no larger than the size of our Solar System at the very center of our galaxy. But we don't see any infrared light from that spot, even though we can see individual stars moving around that spot! That is some of the best evidence we have of a giant black hole at the center of the Milky Way.

Astronomers can also use the motions of stars to get the masses of black holes in other galaxies. This is harder to do, because we can't see the individual stars in the centers of most other galaxies. But we can measure average velocities of these stars, and we find that most galaxies have "supermassive" black holes at their centers, with masses of a million to over a billion times the mass of the sun!

So, we have lots of little black holes (ten times the mass of the sun, probably hundreds in each galaxy), and we have lots of ginormous black holes (millions of times the mass of the sun, but seemingly limited to one or two per galaxy). The first thing that pops into my mind would be that we probably have to build supermassive black holes out of sun-sized black holes, so I think it's natural to assume that there must be black holes with sizes in between, say maybe a few hundred times the mass of the sun to ten thousand times the mass of the sun, and there would be several of those in each galaxy.

But it's been hard to find candidate black holes of these intermediate masses. Some candidates have been claimed. One group, led by astronomer Karl Gebhardt here at the University of Texas, has found evidence of intermediate-mass black holes at the centers of some globular star clusters. Their evidence is from measuring the motions of individual stars, much like in Cygnus X-1 and in the center of the Milky Way.

Another way to find intermediate-mass (mid-size) black holes is to look in with X-ray telescopes. As gas and dust orbit around a black hole, they heat up due to friction. And, since they are moving so fast in their orbits, the gas and dust glow in energetic radiation, including ultraviolet light, X-ray light, and even gamma rays. Numerous studies (like this one) of X-ray sources have suggested that intermediate-mass black holes exist, and yesterday's press release on HLX-1 falls into that category.

The main difference of the HLX-1 black hole with other mid-size black hole candidates is that it is brighter in the X-rays than the earlier candidates. A brighter X-ray source means that it cannot be a stellar-mass black hole, because if those smaller black holes produced as much X-ray light as HLX-1, the X-rays would push all
the gas away from the black hole, and it would stop emitting light. The astronomers studying HLX-1 also rule out that the X-rays come from a distant galaxy, because they don't detect any radio or optical light; supermassive black holes often (but not always) emit light in one or both of these kinds of light.

But I think the jury is still out on whether HLX-1 is any more convincing of a mid-sized black hole than any previous candidate. I won't list off the many questions I have. Frankly, solid evidence is very difficult to come by, and we may just not yet have the necessary tools to convince ourselves that mid-sized black holes exist. Future X-ray and optical telescopes may help a lot by allowing us to see fainter and get better data.

Finally, it may not be true that supermassive black holes are made out of coagulations of small black holes; some people argue that they are formed in completely different ways. I think that this idea is intriguing and could explain the apparent paucity of mid-sized black holes. But the lack of known intermediate-mass black holes may just mean that, in most cases, these black holes don't have any gas or dust to eat. If gas and dust are not falling into a black hole, they are virtually invisible and nearly impossible to detect.

In short, mid-sized black holes may exist and be hard to prove, or maybe they are very rare or even absent. HLX-1 is another important piece in the puzzle, but it is not convincing proof of mid-sized black holes nor the first evidence of mid-sized black holes.

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**100 Hours of Astronomy**

100 hrs of Astronomy, April 2-5, was a global star party, bringing together observers from over one hundred countries around the globe for one hundred hours of continuous observing. Eighty professional observatories broadcast facility tours (“Around the World in 80 Telescopes” - archived at http://is.gd/136Xz), and the IAU estimates around one million people got their first telescopic views of Saturn, the Moon, the Sun, or other celestial objects. Of the 2370 registered events, the W.A.S. provided three, all on Saturday, April 4.

At the historic mill building at Wolcott Mill Metropark, we staged a daytime astronomy presentation for fifty to sixty guests. Bob Berta, Jerry Kuchera, and Dan Olah shared their white-light and hydrogen-alpha solar telescopes with passers-by. We showed the film Solar-Max and provided a table full of information (Mike O'Dowd's solar system and lunar diagrams, IYA and W.A.S. info) and kids' crafts (paper sundials, planispheres, etc.)

Ken Bertin presented on Galileo (the IYA’s man of honor) and Mike O'Dowd brought a replica Galileo scope, and we were the lucky recipients of an original Larry Phipps multimedia extravaganza on the history of astronomy and the telescope, and the role of astronomy and space science in modern life. As the event wound down, Jerry, Larry Kalinowski, and I showed the first-quarter moon in the daytime sky using unfiltered telescopes.

As night came on, the group divided. For the Stargate open house, Ken reprised his Galileo presentation at the education building near Stargate, while Bob Berta and Lee Hartwell gave presentations to those gathered. Of course, club members shared their telescopes. The park ranger gave sky tours as well. We estimate turnout at about eighty for the evening.

Finally, in a joint effort with the Ford Amateur Astronomy Club and the Seven Ponds Astronomy Club, the W.A.S. rekindled our partnership with Metro Beach Metropark. Diane Hall presented on the selection, use, and care of telescopes (with yours truly doing the demonstrations), and Bob MacFarland of the FAAC gave his Astronomy 101 talk. A successful observing event under a clear sky followed, with telescopes provided by long-time members Mark Kedzior, Dan Olah, Stephen Uitti, and others. Sixty people turned out for each of the talks, but the park estimated attendance for the event at over three hundred.

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**IYA 2009 - The W.A.S. Steps Up**

Two of the cornerstone outreach efforts of the International Year of Astronomy, 2009, are now past, and Warren Astronomical Society members have done their part by making great efforts for the events here in metro Detroit.

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This content distributed by the AAVSO Writer's Bureau

The International Year of Astronomy 2009 is a global effort initiated by the International Astronomical Union (IAU) and UNESCO to help the citizens of the world rediscover their place in the Universe through the day-and night-time sky, and thereby engage a personal sense of wonder and discovery.


Astronomy Day

We covered three events for Astronomy Day as well. The Cranbrook Institute of Science hosted solar observing from our solar regulars (those mentioned above and Stephen Harvath). Diane and I did the telescope talk twice for about forty people in all, and Larry reprised his IYA talk in the auditorium for an audience of about thirty. Well over a hundred people got to see the sun telescopically.

On the other side of the Metro area, Jon Blum and others represented the W.A.S. at the Detroit Science Center's Astronomy Day event (organized by the DSC and the FAAC).

We capped off the night with a well-attended and extremely enjoyable open house at Stargate. Telescopes ranged from replicas of Galileo's and Newton's tiny and primitive telescopes to the Big Dob. We hosted over a hundred people over the night, and gave many their first sights of Saturn and the Moon through telescopes.

Thanks a million to all who participated - we're sorry if your name was omitted in this article. (Shoot us an email if so and we will make sure you are properly recognized in the near future.) The next major IYA event is "Galilean Nights," October 23-24, celebrating Jupiter and its moons. We're discussing what sort of events to do for it - if you're interested in participating, drop us a line.

WAS Annual Picnic
Saturday, July 25, 2009

The Warren Astronomical Society is inviting the Ford, 7 Ponds, Oakland and of course our own WAS members to a combination picnic and observing event on Saturday, July 25 at Rotary Park, located in the Wolcott Mill Metro Park, starting at 2 pm and running until ?. Mapquest link HERE

The picnic, socializing, games and solar observing are planned during the day, and for those so inclined - night time observing after dark. WAS will provide lots of sodas, chips and a few other goodies (but no alcohol due to park rules). Due to the number of people expected we won't be able to provide food for everyone...nor a grill to cook on if you bring your own meat, etc. We do have a VERY small gas barbecue people can use but recommend you bring your own personal BBQs, box lunches, etc. There is a very good deli and pizza store on Romeo Plank at 27 Mile Road in Ray Township that we frequent all the time. It is not that far from Stargate.

Rotary Park is a large park and there is plenty of parking space. Feel free to bring any picnic type activities. We will have some activities available such as Horse-shoes, volleyball, badminton, and lots of room for frisbee and football etc. In the evening there is plenty of room to set-up your telescopes. All club members and their families are invited to attend. The event will not be advertised to the public...but there may be some scouts camping there that would enjoy a look through our telescopes.

The club observatory is located in Rotary Park, 1.8 Miles East of Romeo Plank and that is part of the Wolcott Mill/Metro Park system. Besides the observatory there are free tours of the historic Wolcott Mill (grain mill), hikes along the North Fork of the Clinton River, which passes through the park, and the possibility of catching a fish or two in the parks dam near the observatory. We will have walking tours for those interested in seeing the parks attractions.

Bob Berta

Oakland Astronomy Club NEWSLETTER
JUNE, 2009
http://oaklandastronomy.ulmb.com/oacnews.html

Clear skies, Bill MacIntosh

************** THE OTHER CLUBS **************
Seven Ponds Astronomy Club:
Open Invitation

The Seven Ponds Astronomy Club extends its invitation to the Oakland Astronomy Club and Warren Astronomical Society members to our monthly meetings. Our club website is: www.geocities.com/sevenpondsac, and has all the information about our upcoming meetings, maps to Seven Ponds Nature Center, etc. please let me know if you might be attending the meetings so that I can make appropriate plans to handle the expected crowd. If you have any questions, please contact me.

John Lines - Seven Ponds Astronomy Club

The Ford Amateur Astronomy Club

FAAC is planning to make our August 29th Beginner's Night at Island Lake Recreation Area (Spring Mill Pond site) into a multi-club picnic and observing ses-
We would like to invite the Warren and Seven Ponds members to attend with us. We will provide hamburgers and hotdogs and anyone attending can bring their own drinks and a dish to pass. The Beginner's Nights normally begin at 7:00 PM, so we thought we would start the picnic around 5:00 PM, since we may have people coming by after 7:00 PM who want some help with their telescopes. Link to a map for Island Lake:
http://www.boonhill.net/faac/other/observe.html

 DON'T FORGET - Star Trek: The Exhibition
The Detroit Science Center

Star Trek: The Exhibition exhibit opened on February 13th, 2009 at The Detroit Science Center. The Detroit Science Center has enlisted local fans to serve as volunteers. The Star Trek Exhibition will run until Sept 7, 2009. For further information, link to:

Detroit Science Center
5020 John R
Detroit, MI 48202
www.detroitsciencecenter.org

Thank you!
John A. Schroer – Planetarium Education Coordinator

OPEN LETTER TO NEW MEMBERS OF THE WARREN ASTRONOMICAL SOCIETY

Hello, and welcome to the Warren Astronomical Society. Thank you for joining.

As a member, you are entitled to a WAS membership card and a copy of the club handbook. The membership card guarantees you access to the club library, equipment loans, and Stargate Observatory. We are in the process of having new membership cards printed; yours will arrive in the next two months.

We are currently working on a ground-up rewrite of the club handbook, which will offer full information about online services, loaner telescopes, club parties, some of the other benefits of memberships, and what the Society does for astronomical outreach in the Metro Detroit area. In the meantime, if you have any questions about these subjects, feel free to email us.

These things, though, are only symbols of what the Society represents: a group of people from different backgrounds and with different life experiences who have come together to share their knowledge of astronomical observing, astrophotography, astrophysics, cosmology, etc. with each other and the general public. Participation is strongly encouraged, and extremely rewarding.

Here is a brief guide to the club's online resources, to help you participate online in event registration, club discussions, etc.:

* Dick Gala, our mailing list manager, sends email notifications of W.A.S. meetings and certain special events. He also emails all members when a new issue of our monthly magazine, the Warren Astronomical Society Paper (aka The WASP) is available.

* The Society's main website is:
A redesign is coming shortly. The site offers information about the W.A.S., an event schedule, a blog with short articles about minor club happenings, an archive of the newsletter, photographs from our history, astrophotographs taken by our members

* To discuss astronomy with other members, plan trips to Stargate or other local observing sites, or share documents and files, join the WarrenAstro Yahoo! Group:
http://tech.groups.yahoo.com/group/warrenastro/

* Events with descriptions are listed on our Meetup page:
http://www.meetup.com/warrenastro/
If you sign up with Meetup, which we strongly encourage but do not require, you can get email reminders about observing sessions and club meetings, review and comment on events, and share event photos.

* We have a news feed on Twitter - quick updates on what's happening in space science and in the Society.
http://twitter.com/warrenastro

* If you have a Facebook account, there is a W.A.S. group:
http://www.facebook.com/group.php?gid=66418090854&ref=nf
(You must be a member of Facebook to view the group.)

I should note that none of the email lists are extremely high-traffic, so please don't worry about your inbox being filled with W.A.S. mail. You are not obligated to use any of these resources, but they are available to you if you so choose.

Welcome to the club! We hope to see you at a meeting or observatory night soon.

Sincerely,
Jonathan Kade
Secretary, Warren Astronomical Society
**JPL Scientist Stephen Edberg**  
**Talks Exoplanets**  
*By Jonathan Kade*

On May 16, 2009, NASA/JPL system scientist Stephen Edberg gave W.A.S. members and the general public a comprehensive look at worldwide attempts to identify and study exoplanets. More than 160 signed up for an entertaining and fast-paced spin through the fundamental concepts of planet-hunting and the related space science programs coming in the next twenty years.

WAS President Bob Berta said afterward, "Excellent speaker...perfect level for the audience...not too high end nor overly simplified." Diane Hall wrote, "Stephen Edberg's presentation on the whys and hows of discovering planets beyond our solar system made a highly sophisticated field of astronomy accessible without watering it down."

Edberg's talk made excellent use of some improvised props: a rubber ball with a piezo buzzer inside, to demonstrate the Doppler shift, and a pair of marbles mounted on a stick, to demonstrate gravitational center of mass. His props were effective and entertaining - he engaged the audience in a round of catch with the Doppler-ball.

WAS Treasurer Stephen Uitti observed of Edberg's project, the Space Interferometry Mission, "His own professional interest in this stems from work on a space mission that has not launched as yet. Like the Kepler mission, which recently launched, it should be able to detect Earth-like planets around stars other than the Sun. It's a mission that compliments Kepler in many ways."

One of the most striking features of the presentation was the description of just how few of the featured exoplanet missions seemed likely to make it into space. Edberg described the challenges of funding the more ambitious and exciting missions, and noted that many of the instruments he described were likely to stay on the drawing board - which was somewhat disheartening to those dedicated to finding other worlds like ours.

All in all, though, it was a light-hearted and enjoyable evening. Thanks to Cranbrook Institute of Science for hosting and to Stephen Edberg for sharing such a great talk with us.

Fun fact: Edberg has a minor planet, 3672 stevedberg, named after him.

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**SOLAR UPDATE**

The National Association for Amateur Radio maintains a website to promote interest in Amateur Radio communications and experimentation, represents US Radio Amateurs in legislative matters, and maintains fraternity and a high standard of conduct among Amateur Radio operators. Interestingly enough, a major influence on how radio waves propagate in other than straight line paths is electromagnetic radiation; both in Earth's atmosphere, and solar-terrestrial interactions. As the Sun's activity has a great influence on our electromagnetic field, amateur radio enthusiasts monitor sun activity regularly. For more information concerning radio propagation, visit the ARRL Technical Information Service Propagation page [http://www.arrl.org/tis/info/propagation.html](http://www.arrl.org/tis/info/propagation.html). To read this week's Solar Report in its entirety, which includes updates on sunspots, solar flares, and Coronal Mass Ejections (CME), check out the W1AW Propagation Bulletin page [http://www.arrl.org/w1aw/prop/](http://www.arrl.org/w1aw/prop/).

**Propagation Forecast Bulletin**  
From Tad Cook, K7RA  
Seattle, WA

On June 22, 2009, Jerry Kuchera wrote: Sunspot 1022. Today at 11:29am --In white light I seem to see another faint one nearby, with three even fainter disturbances among the two. Anyone confirm?  

Jerry Kuchera
Warren Astronomical Society
2009 Presentations

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Please contact the 1st V.P. (program chairperson) to:
1: Schedule new presentation.
2: Alter scheduled presentations.
3: Add a subject title to your presentation.
4: Change the subject title of your presentation.

At Cranbrook, on July 6th, Jim Shedlowsky, former WAS treasurer and rockabilly legend, presented a history of the Hubble Space Telescope’s development, deployment, and correction.

The Hubble wasn’t a perfect success from the beginning, but overcame miscalculations and many problems to become one of the most successful scientific ventures in human history.

Jim worked for 36 years at General Motors as a Vehicle Development Engineer/Manager specializing in Acoustics, Noise, and Vibration. He graduated from U of M in 1960 with a degree in Engineering Physics and spent 2 years as an officer in the US army in Germany. In his spare time he recorded music for Epic and Roulette Records as a member of the “Skee Brothers” band.

At Macomb CC on July 16th, Mike Simonsen returns to tell us about the mysterious eclipsing binary star Epsilon Aurigae.

Photo credit: Jon Blum

The next Macomb meeting is scheduled for Thursday, May 21st, and Cranbrook meeting is scheduled for Monday, June 1, 2009. After each meeting of the Warren Astronomical Society, some club members go to a restaurant for a snack and informal chat. All members are invited to join us there. We generally leave from the Macomb and Cranbrook meetings about 10 PM, and meet at the restaurant a few minutes later. We order food from the menu, sit around and chat for about an hour, and leave the restaurant between 11:30 PM and midnight.

After the Macomb meeting, club members meet at:

National Coney Island
28901 Groesbeck Hwy
Roseville, MI 48066-2334
just south of 12 Mile Rd.
Roseville
Phone: 586-772-1324

After the Cranbrook meeting:
Red Coat Tavern
31542 Woodward
on the east side of Woodward, two blocks north of 13 Mile, just north of Burger King in Royal Oak
Phone: 248-549-0300
2009 Stargate Observatory Open House Schedule

NOTE: Depending on weather at the time, open house dates are:

- July 25 (WAS Picnic), Aug 01, Aug 29, Sept 26, Oct 24, Nov 21, Dec 26

1. Normal closing time will depend on events, weather, and other variables.
2. The observatory may be closed one hour after opening time if no members arrive within the first hour.
3. Contact me for other arrangements, such as late arrival time.
4. An alternative person will be appointed to open the observatory if I cannot attend a scheduled date or opening.
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 staffing availability.
7. An e-mail will be posted no later than 2 hours before starting time in case of date change or cancellation.
8. It is best to email me up to 2 hours before the posted opening with any questions you may have. I will not be able to receive email after 2 hours before open time.

If there’s something specific you’d like to see, we’ll do our best to make it happen. We may have safe, filtered solar telescopes to look at the sun in amazing detail before it gets dark; if you’re interested in seeing our local star, let us know and we’ll try to have a telescope available.

* Please don’t use white light flashlights when others are observing. Others will have flashlights, but if you’d like to bring your own, you can easily make a red-light flashlight that will help you get around in the dark and is safe for night vision. I make reasonably decent ones with a red marker and an index card*, but you can read other ideas here.

* Observing is an outside activity, so dress accordingly - a little warmer than the temperature would indicate. Even in the summer, it can get surprisingly chilly at night. Like any other activity, the key to lasting is layers, layers, layers! Plan to have at least two layers for several garments: socks, pants, and a shirt. Core temperature is important too, so pay extra attention to keeping your torso warm - an insulated vest can work wonders.

** Stargazing Manitoulin:
August 14-18, 2009
Manitoulin Star Party


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Star Party Tips & Etiquette

* When attending a Star Party, you don’t have to stay the whole time - though we ask that you aim your headlights away from the observing field when you park in case you have to leave early.
* Astronomical twilight will begin around 9 PM, so please plan to be at Bill’s place by 8:30. Be careful with headlights on your way in, especially after sundown. Make sure to turn the dome lights off if possible, and park your car facing away from the observing field if you have running lights.
Manitoulin is beautiful and diverse, the Bruce Peninsula equally so, and the ferry to the island is great fun. Parts of the island, including Gordon's Park, have been designated a dark sky preserve by the Royal Astronomical Society of Canada (RASC). If you're interested in wildlife, fossils, Great Lakes geology, or just a fun camping trip, it's something to consider. It's very kid-friendly, so take that into account. Jonathan Kade

**THE SWAP SHOP**

*This column is for those who are interested in buying, trading or selling items. At the present time, you may submit ads of items for sale to Larry Phipps - (publications@warrenastro.org). The ad will run for six months. The month and year the ad will be removed is also shown.*

**WANTED:** Spidervane for 6” Criterion Dynascope. My name is Gary Klein, I am a former member of WAS. I am getting back into observing and photographing Celestial objects. On dusting off my 6” Criterion Dynascope, I found some damage to the tube. I began disassembling the finder scope and secondary mirror and spider. I ended up twisting off one of the mounting studs for the spider. It is beyond repair. I have unsuccessfully been on a search for a direct replacement of the spider. The secondary mirror is fine. It is a straight 4 legged spider. Contact Gary at: (586) 247-2460

Thanks. Gary K. [9-2009]

**FOR SALE:** This is a 8 or 9 year old Celestron Starhopper 6” Dob. I've used it up at our cottage for years and its given me many years of enjoyment. I am including a 25mm plossl eyepiece and a Red dot laser star spotter. I am the original owner and am selling it because I recently upgraded to a bigger scope. I am asking $300 but will take any reasonable offer. Call John 586-726-0741 [9-2009]

**FOR SALE:** Turn your 2X Barlow into a 2.5, 3, 4, or 5X device with my Barlow amplifier. Use it with your lowest power eyepiece and keep that eye relief and apparent field, no matter how much you magnify your image. No more squinting with a 4 or 6mm eyepiece. The Barlow amplifier is a simple extension tube available for $4. A 40 power eyepiece becomes a 200 power eyepiece with my 5X amplifier. Call at 586-776-9720 or e-mail me (cometman@mybluelight.com) and I'll bring your amplifier choice to the next meeting. If you buy the set of four amplifiers, I'll take $3.00 off the total price. For mail delivery, to your home address, add $1.50 for shipping. [11-2009]

**FOR SALE:** Meade 16 inch, Schmidt-Cass telescope with field tripod. Asking $10,000. Call John at 586-242-8246. [12-2009]

**FOR SALE:** Discovery PDHQ Dobsonian Telescope, 12.5”, f5, (94% pyrex mirror reflectivity), 1 1/4”, 2” Crayford focuser, Base plus 2x2’ Platform, 12v anti-dew system, Telrad Reflex Sight, Aluminum foam lined lens case. **Meade lenses:** 40 mm super wide, 32 mm super plossl, 8.8 mm ultra wide, 12.4 mm super plossl, 4.7 mm super plossl, 2x “shorty” Barlow. **Sirius Lenses:** 25 mm plossl, 17 mm plossl, 10 mm plossl. **Filters:** 1 1/4” 13%, 25% Moon, 1 1/4” variable polarizer (moon), 1 1/4”, 2” Oxygen III, 1 1/4” Narrow Band, 1 1/4” Blue, Green, Red, Yellow, 2” Fine Focus Adapter, Orion Collimating Cheshire, Orion LaserMate Collimator, Red Beam Flashlight, Desert Storm “Aluminum” Cover, Transporting Dolly. Initial Purchase Price: $3500. Asking Price: $1900. Contact Al McDonald, 248 -343-1643. [1-2010]

**DON’T FORGET:** WAS Annual Picnic Saturday, July 25, 2009

Wolcott Mill Metro Park 2:00 pm to 12:00 am

**What would you Like to see in the WASP?**

The WASP, which is forty years old this year, covers both breaking astronomical stories and WAS goings-on. What would you like/expect to see within its pages? To see a recent poll, click here:

http://meetup.warrenastro.org/polls/191846/?pollId=191846
Although our good buddy, and former WAS President Norman Dillard has been keeping a low profile lately, it has been for a very good reason... In the past few months he has had 4 eye surgeries on one eye and is due to have surgery on the other eye. He is finally coming successfully out of the ordeal and sends his best to all. Norman, we all wish you the best, and hope to see you soon! (and hope you can see us too!)

Participation in the 100 Hours of Astronomy Celebration 2009

The 100 Hours of Astronomy Task Group of the International Year of Astronomy 2009 thanks Warren Astronomical Society for being an official participant in the historic outreach event that took place worldwide from the 2 to 5 April, 2009 and reached over one million people!

Clear Skies and Keep Looking to the Stars!

Mike Simmons, Co-Chair
Douglas Pierce-Price, Co-Chair
Donna Smith, Sidewalk Astronomy Organizer