July August 2018

★BUFFALO ASTRONOMICAL ASSOCIATION★

THE SPECTRUM

The Copernican Revolution.

Kellogg Observatory Reopening

LOL Academy

The Official Newsletter of the Buffalo Astronomical Association

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ABOUT THE COVER: Mars will be at closest approach late July. It will be nearer and bigger that it was in 2003 .
Image courtesy of NASA.

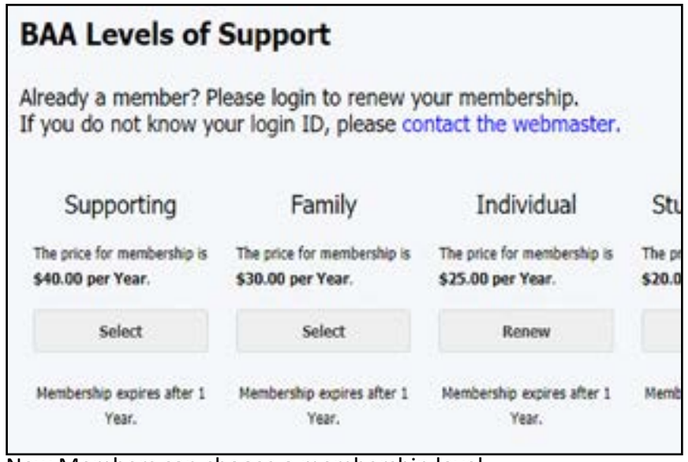
Renew your BAA membership in 3 easy steps

Visit http://www.buffaloastronomy.com

Non-members can sign up by clicking on “Join the BAA”
Current members can renew by clicking on “Membership renewal”(you will be asked to login)

#1

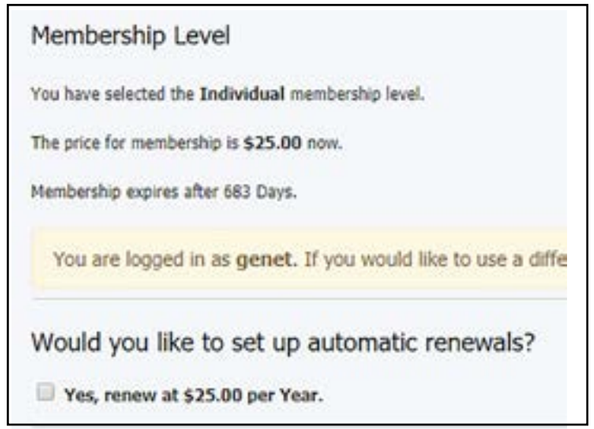
#2



New Members can choose a membership level

existing members can choose to renew current level or choose a new level.

#3



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Confirm your Membership Level and checkout using Paypal where you can pay with a Credit card/Debit Card or your Paypal balance

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Instagram

Online at
www.buffaloastronomy.com

CALENDAR

July 14	Wilson Star Search
July 14/15	Grand Opening of the Museum of Science Observatory
July 20	BAA City Astronomy, Buffalo Outer Harbor
July 21	Public Night at Beaver Meadow Observatory
Aug 4	Public Night Beaver Meadow Observatory
Aug 12	Perseid Meteor shower anyone??
Aug 17	BAA City Astronomy, Buffalo Outer Harbor second event!
Aug 18	Wilson Star Search
Sep 1	Public Night Beaver Meadow Observatory
Sept 7/8/9	Black Forest Star Party Weekend!
Sep 8	Wilson Star Search
Sep 14	7:30pm BAA Meeting at Buffalo State
Oct 6	Public Night Beaver Meadow Observatory- last one of the season
Oct 12	7:30pm BAA Meeting at Buffalo State
Oct 13	Wilson Star Search- last one of the season
Nov 9	BAA Meeting at Buffalo State 7:30pm
Dec 14	BAA Meeting at Buffalo State 7:30pm

SEND CALENDAR EVENTS TO
Mike Humphrey jetpac@iname.com
FOR THE LATEST INFORMATION ON CLUB EVENTS,
visit http://www.buffaloastronomy.com/events

MEMBERSHIP APPLICATION

You can join (or renew) at the organization web site, http://www.buffaloastronomy.com.
Click the 'Membership' Tab. To Join by mail Send funds to address shown along with the following information: Name, Address, Phone Number, Special Interests in Astronomy, Do you own a Telescope? (If so, what kind?), and where you first heard of The BAA.

BAA MEETINGS

All meetings are held at the Buffalo State College classroom building. For directions to the location and more information see the last page.

GENERAL MEETING
7:30 P.M. room C122
Classroom Building

STELLAR NURSERY MEETING (Kids under 10)
7:00 P.M. room C122
Classroom Building

"TUESDAY" NIGHT IMAGERS MEETING
AS POSTED by Dan Marcus via E-mail @ BMO

GENERAL MEMBERSHIP MEETING

The Buffalo Astronomical Association holds its regular monthly General Membership Meeting on the second Friday of each month.

BOARD OF DIRECTORS MEETING

The Board of Directors Meeting is held on dates and at locations scheduled by the board. Information provided to The Spectrum will be published. The meetings are open to all members of the Club in good standing. Attendance is encouraged.

BAA Directory

CLUB OFFICERS

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Mike Anzalone
VICE PRESIDENT
Mike Humphrey
SECRETARY
Neal Ginsberg
TREASURER
DaRand Land

AT-LARGE-DIRECTORS
Noah Erhart
Taylor Cramer
Steve Smith

COLLEGE OF FELLOWS
Rowland Rupp

BMS RESEARCH ASSOCIATE
Alan Friedman

OBSERVATORY DIRECTORS
Dan Marcus
Gene Timothy

SPECTRUM EDITOR
Mike Humprey

WEBMASTER
Gene Timothy

OUTREACH COORDINATOR
Gene Timothy

MEMBERSHIP CHAIR
Dennis Bartkowiak

CHECK THE WEBSITE

BUFFALOASTRONOMY.COM

The BAA website not only has news and information about our association, but also a variety of features to manage your membership and connect with other club members. Current members can post photos, trade gear, pay dues, manage discount magazine subscriptions, swap stories in the forum, and more. Questions about the site? Need a hand to get your account set up? Contact webmaster@buffaloastronomy.com

BAA Marketing Materials

The BAA has ordered new marketing materials to represent the association while at public Outreach events. We have a new table cloth with logo as well as 2 new banners for display at the Observatory during Public Nights, Wilson Star Search and at Wilkeson Pointe Star parties

BAA T-Shirts

Show your support for the BAA

The BAA has a new logo and with it we have new T-Shirts available for Purchase. each T-Shirt is $10 and can be prepaid and ordered by seeing Gene Timothy or sending an e-mail to info@buffaloastronomy.com.

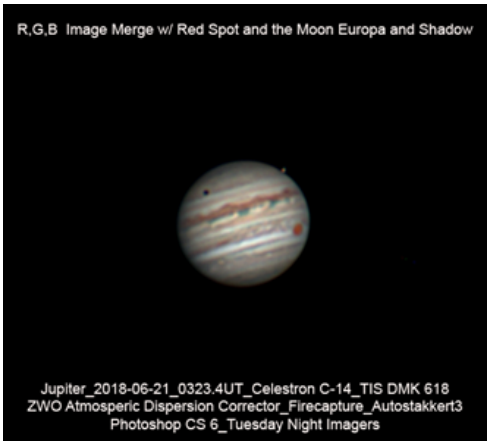
The Latest Observatory News:

After purchasing the needed parts the Tuesday night crew now has the off axis guider working with the C-14 or the NP101is and the clubs ATIK camera. The SkyX was giving us trouble autoguiding, but PHD2 seems to be working well. We now have the ATIK operable using APT and PHD2 which will allow us to dither exposures, and as soon as we figure it out, we should be able to run two cameras on two different computers while dithering the exposure. While at NEAF I had a talk with the Astrophysics people, they recommended that we replace the grease in the AP1200 mount. I purchase the grease and we regeased the mount – while regreasing we found the RA spur gear loose on the worm gear shaft (AP does warn you to check it when greasing). We tightened the set screw and now we have eliminated the RA backlash and the mount is much quieter. Definitely still having way tooooo much fun at the Observatory!

One piece of bad news is the clubs modified canon T3i's optical viewfinder is not working. Not sure what the issue is caused by, but the view finder will not focus on the ground glass screen. The good news is it still works using live view and does not affect the imaging portion of the camera. Actually this is not much of a problem, but users need to know if the issue. I do not know what happened? Only conclusion is the camera must have been dropped? Or possibly some glue gave out or a screw was left loose when the camera was modified and the pentaprism somehow got loose??

I am planning on cleaning the C-14 corrector inside and out, when we do it will be determined on the weather. I will do it on a good night when I can get there early. Not that the corrector is really dirty, but we are able to do collimination's more readily now that we have the tri-bahtinov mask technique perfected. I would like to get it done before Mar's close approach.

Tues night group has been having fun imaging Jupiter- I purchased a motorized filter wheel at NEAF and we tried it out for the first time and were pleased with the LRGB images. We can have firecapture change the filters and adjust the focus as it automatically takes the images in sequence- again way toooo much fun. The right picture was taken with a DFK color camera. It seems we do slightly better when using RGB images. Only time will tell



M-51 Whirlpool Galaxy
5-7-2018
Tues Night Group
ATIK 383L camera, C-14 +focal reducer
5min subs, 10 frames + darks - total 50 min

Tuesday Night Group will continue to meet on the clearest M/T/W night starting around 7pm. As usual we will be imaging the planets especially when they are at close approach (Mars and Saturn), and any deep sky targets people want to image. It is a great way to learn astrophotography as well as how to use telescopes. It is MUCH more fun to do astronomy with a group of friends than to be alone and frustrated. At the Obs "Tue" nights there are always members that can help you work through the learning curve of astronomy and astrophotography! If you want to be include in my emails as to when we are going out please send me you email address and I will include you in the list. If you are on it and want to get off of it please let me know as well.

Astronomy Adventures:
Do you want to chase and Asteroid occultation, Grazing Lunar Occultation, Clear dark skies to image? I'm always up for an adventure, so give me a call. I will also be posting to the Tues group as well as on our web site any ISS transits of the Sun or Moon. Eric Briggs reports that there will be an asteroid occultation close to the Observatory that we should monitor if it is clear on the evening of July6/7 an occultation by the dwarf planet (50000) Quaoar on the night of Saturday after next. This event, the sudden dimming and then recovery of a 15th-Mag star, should be in range for the C14 at Beaver Meadow, either with the CCD (using a focal reducer and a fairly rapid series of images) or if a member has a Mallin-Cam. The club does have an Astrovid we can use, and I will be leaving my frame grabber and time stamper/GPS unit at the Observatory. I plan on being there to image it if clear. All people on the Tues night email list will be getting an email about the event if it looks clear. Check this link for more information http://www.boulder.swri.edu/~buie/recon/events/50000_180708_0257947.html

Black Forest (Rain Fest) Star Party registration is now open. If you are planning on joining the BAA contingent you need to register soon as they limit the number of people who can attend. See this link for more information http://bfsp.org/ and to register. This is held a Cherry Springs State Park a National Dark Sky Site. It is darker than Beaver Meadows, but more important there are a LOT of astronomers and telescopes. Think "Tues Night" on steroids. If you can't learn a new trick here you never will!

Loaner Scopes:

The Observatory has several loaner scopes you can check out for 4 weeks at a time. We have a Celestron 8" on a tracking German Equatorial Mount and a 6" Dobson. If you wish to borrow one of these scopes, see Gene Timothy on a "Tues" night.

On a Sad Note:

Long time BAA member, Ed Czapla, died on January 26th at age 96. Ed was still listed as a member in 2012, but not in 2014. He was a regular attendee of our monthly meetings and a BAA supporter.

He will be missed

KELLOGG OBSERVATORY REOPENING
by Alan Friedman

On Saturday, July 14th, the Kellogg Observatory at the Buffalo Museum of Science will reopen to the public for the first time in two decades. The shiny new aluminum dome, a familiar sight when approaching downtown Buffalo via Rt.33, houses a completely restored Lundin refractor. The historic 8" achromat - crafted by Robert Lundin, the long-time manager at Alvan Clark & Sons - will see first light on opening weekend. It will be rededicated as The Ernst Both telescope in memory of the Museum's long time director and Curator of Astronomy.

Pictures of the new facility have been closely guarded and will not been released until the opening. Having had a chance to work a little behind the scenes, I can report on the major improvements for public astronomy outreach. Happily gone are the spiral stairs and that white knuckled climb to the roof with our expensive scopes. There is now a broad staircase and a new elevator that stops at two levels, making both the rooftop and the observatory accessible to all visitors. The original German equatorial mount has been completely rebuilt with digital encoders and high speed slewing motors to provide go-to access to the night sky.

Occupancy inside the dome is limited to a handful of visitors at a time. The rooftop observation deck has been enlarged, allowing more than 100 to appreciate the instruments and knowledge of BAA volunteers. Centered on the rooftop is a permanent pier (adapted by BAA member Anthony Davoli) that holds the Bistany Telescope. This 160mm TEC fluorite refractor rides on an Astro-Physics go-to mount donated to the Museum by the family of Ted Bistany. Ted was a long-time BAA member who passed away 8 years ago. Riding alongside the Bistany scope is the Museum's new Lunt 100mm hydrogen alpha telescope. On opening weekend, we will provide white light and Ha views of our neighborhood star through this wonderful set-up.

Opening weekend should be quite the affair. I've heard from many BAA members who plan to come for the celebration and help with outreach to visitors. We could use more. Bring a telescope, a project to share or just help engage visitors and talk about the BAA to those waiting in line for a look through the instruments. We won't know ahead of time how many to expect, but it could be very busy. The Museum will be open from 9:30am to 11pm both Saturday and Sunday of opening weekend. If you can join us, send an email to alan@greatarrow.com and let me know the day and time you would like to participate. I will prepare a list of BAA volunteers to receive free admission to the Museum. It should be a great couple of days – look forward to seeing you there!

It can be justly stated that the Copernican revolution marked a sea change in western thought. True, the ancient Greek astronomer, Aristarchus of Samos (310BC-230BC) was the first to introduce a heliocentric model. But sadly his ideas were ridiculed because a moving Earth contradicted the evidence of the senses and his writings eventually became lost. Eighteen centuries later, Nicolaus Copernicus (1473-1543) resurrected the idea and forwarded the first mathematical and systematic explanation of the heliocentric theory.

The outcome of this was the popular notion that Copernicus demoted the Earth from its privileged position as the center of the universe. The noted astronomer Martin Rees commenting on this stated: "It is over 400 years since Copernicus dethroned the Earth from the privileged position that Ptolemy's cosmology accorded it." [1] However, this is a misconception that has become folklore. According to Dennis Danielson, professor of Science History at the University of British Columbia-Vancouver, the center of the universe in the early sixteenth century was not an exalted location, but rather the worst part of the universe. Dante's medieval work, *The Divine Comedy*, indirectly alludes to this concept by placing Hell inside the core of the Earth, which itself is at the center of the Universe. And, according to Dante, Heaven was located up from and away from the center of the universe. Echoing this medieval construct, Cardinal Robert Bellarmine, who was critical of Galileo at the time of his confrontation with the Catholic Church, commented that the Earth was far from Heaven and is at the center of the universe. And, one writer of the period graphically described humankind's existence on the Earth as being "lodged here in the dirt and filth of the world, nailed and rivetted to the worst and deadest part of the universe, in the lowest story of the house , and most remote from the heavenly arch." [1]

Then from whence came the popular and diametrically opposed notion that Copernicus dethroned the Earth from its exalted position? According to prof. Danielson, one can trace this view back to 1650 as the starting point. By the latter part of the eighteenth century this viewpoint became fully entrenched. A prime example of this is the words of the poet Goethe (1749-1832) who wrote this glowing verse: "Of all discoveries and opinions, none may have exerted a greater effect

on the human spirit than the doctrine of Copernicus. The world had scarcely become known as round and complete in itself when it was asked to waive the tremendous privilege of being the center of the universe." [2]

Another – and perhaps more significant- notion is the widespread misconception or revisionist history that Copernicus feared that the Catholic Church would out rightly condemn his ideas and that the Church never accepted his model. Regarding the former, Copernicus did not fear any hostile reaction from the Church. [2][3] Rather, his writings were directed at fellow scholars and he feared they would be rejected on scientific, not religious grounds. And this is the reason that Copernicus delayed the publication of his major work, *On the Revolutions of the Heavenly Spheres* until 1543, and shortly before his death at age seventy.

Concerning the latter, there is evidence that the Church was initially receptive to Copernicus's ideas. This is illustrated by the church's response to Copernicus's earliest writings on the subject. Sometime before 1514 Copernicus outlined his heliocentric theory in a 40-page essay that became known as the *Commentariolus*, Latin for "small commentary" and the name given to it by the astronomer Tycho Brahe (1546-1601). Copernicus gave unpublished copies of it to friends and fellow scholars. Many of them urged Copernicus to publish his findings and through word of mouth his heliocentric theory gained notoriety. The result was that it became known to the Church. For example, Cardinal Schonberg of the Roman Curia was impressed with Copernicus's ideas and insisted that he publish them in the interest of science. [4] In his letter to Copernicus, dated November 1, 1536, Cardinal Schonberg was effusive in his praise. A portion of it is worth recounting: "Some years ago, word reached me concerning your proficiency, of which everybody constantly spoke…. For I had learned that you had not merely mastered the discoveries of the ancient astronomers uncommonly well but had also formulated a new cosmology …. Therefore with the utmost earnestness I entreat you, most learned sir, unless I inconvenience you, to communicate this discovery of yours to scholars …. If you gratify my desire in this matter, you will see that you are dealing with a man who is zealous for your reputation and eager to do justice to so fine a talent. [2]

Moreover, Copernicus's

heliocentric theory already reached the Pope's ears. In 1533, Johann Widmanstetter, secretary to Pope Clement VII (1523-1534) gave a series of lectures in Rome on Copernicus's theory and explained it to the Pope. The Pope reacted favorably to Copernicus's theory and was pleased enough at the talk to reward Widmanstetter with a rare manuscript. [2] [5]

However, despite all this, Copernicus remained reluctant to openly publish his theory. As was mentioned earlier, he feared that his peers would not accept his ideas. Specifically, Copernicus was troubled that he had not proved parts of his heliocentric theory to his total satisfaction. [2] Accordingly, it is unlikely that Copernicus would have given the world his heliocentric theory were it not for a young Lutheran mathematician and astronomer named Georg Joachim Rheticus (1514-1574). Rheticus, who chaired the mathematics and astronomy departments at the University of Wittenberg, Germany heard about Copernicus's ideas and was curious. Therefore, in 1539, Rheticus was given permission to go on sabbatical and study under Copernicus for two years in Copernicus's hometown of Frombeck, Poland. This resulted in Rheticus being the first to formally publish and make known Copernicus's heliocentric theory. The account was printed in 1540 and titled," The First Account of the Book on the Revolutions by Nicolaus Copernicus." This later became known as the *Narratio prima,* Latin for "first report". The next step was for Rheticus to convince a reticent Copernicus to in-turn publish his theory. By this time, Copernicus had already completed an expanded version of the *Commentariolus,* which the world would later come to know as, *On the Revolutions*. Rheticus brought along copies of books on mathematics, which he displayed to Copernicus to show the quality of printing in the German cities. But more importantly, the fact that Rheticus's *Narratio prima* did not cause any significant opposition to the heliocentric theory finally prompted Copernicus, then age sixty-eight, to acquiesce to having his theory published. In 1541 Rheticus returned to the University of Wittenberg to resume his teaching duties and carried along a copy of Copernicus's manuscript for printing. Manuscript in-hand, Rheticus delivered it to the city of Nuremberg for publication.

But shortly before publication, an anonymous preface to the work was added. The

person responsible for this was Andreas Osiander (1498-1552), a Lutheran minister who came to know about Copernicus and consequently corresponded with him. In one of the correspondences, Copernicus asked Osiander's advice on how to minimize the possible criticism that he feared from his fellow scholars. Osiander suggested that the theory be presented as a mere hypothesis. [5] Copernicus rejected this idea, but despite this Osiander went ahead and included the anonymous preface. In it, Osiander wrote: "Since he [the astronomer] cannot in any way attain to the true causes, he will adopt whatever suppositions enable the motions to be computed correctly from the principles of geometry for the future as well as for the past…. these hypotheses need not be true nor even probable." [5] The effect of this was twofold: First, most readers would assume that it was written by Copernicus [2] and second, this clearly contradicted the main body of Copernicus's work. [5] Accordingly, Rheticus and others close to Copernicus roundly condemned Osiander and Johannes Petreius (1497-1550), Copernicus's publisher for this act of literary license.

Copernicus dedicated *On the Revolutions* to Pope Paul III (1534-1549), the successor to Clement, giving testament to the fact that Copernicus did not fear a hostile reaction from the Church. The work came out in March 1543, and reached Copernicus's hands only hours before he died on May 24, 1543. *On the Revolutions* was disseminated across Europe over the next fifty years, with a second edition published in 1566. [5] The Church was receptive at best and indifferent at worst to Copernicus's heliocentric theory. For example, for at least sixty years after his death, Copernicus's ideas were partially taught at several leading Catholic universities. [1][3] The objection to Copernicus's theory came from astronomers who claimed that Copernicus did not present adequate evidence. In particular, critics pointed to a lack of observational evidence indicating the parallax of stars as they said should be the case if the Earth revolved around the Sun. On the whole, the criticism was mild and not widespread.

However, at this point the reader may well ask why the Catholic Church banned Copernicus's theory for more than two centuries, as is taught in all the schoolbooks. And the answer, ironically, is that opposition did not originate from the Church. Opposition arose

initially among Protestants, who were the fiercest opponents of the Copernican theory. [1][4][6] According to the noted science historian, Thomas Kuhn, the reason for this was due to the fact that Martin Luther (1483-1546) and other leaders of the Protestant Reformation were emphasizing the Bible as the sole source of Christian knowledge and authority. Luther, who became aware of Copernicus's ideas had this to say in a talk in June 1539: "There is mention of a certain new astrologer (Copernicus practiced astrology as well) who wanted to prove that the earth moves and not the sky, the sun, and the moon. This would be as if somebody were riding on cart or in a ship and imagined that he was standing still while the earth and the trees were moving…. So it goes now. Whoever wants to be clever must agree with nothing that others esteem…. I believe the holy scriptures, for Joshua commanded the sun to stand still and not the earth. [2] The scriptural passage Luther referred to is Joshua 10:10-15. According to Kuhn and others such as Mano Singham of Case Western Reserve University in Cleveland, Ohio, the Protestant opposition to Copernicus's theory as being unscriptural and heretical eventually prompted the Catholic Church to counter it. This occurred in 1616 when the Church banned it's teaching until 1822 and prohibited the publication of *On the Revolutions* until 1835.

In summation, the story of the Copernican revolution is full of poignant irony. For one, it took a devoted Lutheran, Rheticus, to encourage Copernicus, a faithful canon in the Catholic Church, to share his ideas with the world. And all this at a time when central Europe was racked in a bitter conflict between Catholics and Protestants – at times violent. This is made all the more striking due to the fact that Rheticus came from the University of Wittenberg – the very center of Protestantism at the time, where Luther taught and disseminated reformation theology. Also, remarkable is the fact that Protestant Europe at the time of Galileo's trial changed direction and became more tolerant of the heliocentric theory than Catholic Europe. Food for thought. End.

Notes

[1]. Mano Singham, "The Copernican Myths," De-cember 2007, *physicstoday.org*, http://joelveleasco.net/teaching/3330/singham07copernican-myths.(copernican-myths.(accessedMay 2, 2018).

[1]. Mano Singham, "The Copernican Myths," De-cember 2007, physicsto-day.org, http://joelveleasco.net/teaching/3330/singham07copernican-myths. (copernican-myths. (accessedMay 2, 2018).

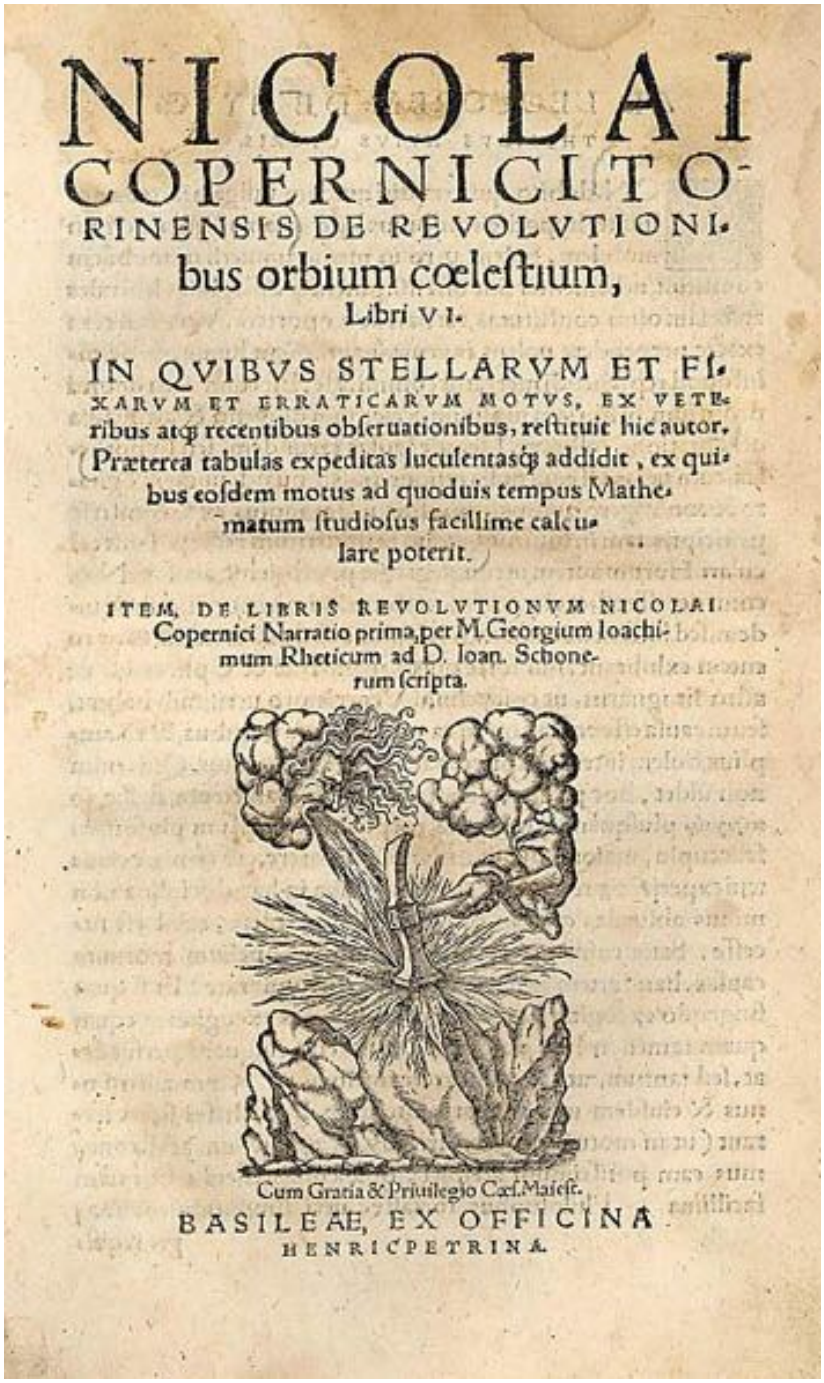
[2]. Jack Repcheck, *Copernicus's Secret. How the Scientific Revolution Began* (New York: Simon & Schuster, 2007).

[3]. Steph Solis, "Copernicus and the Church: What the history books don't say," February 19, 2013, *The Christian Science Monitor*, https://tinyural.com/y94a34zj (accessed May3, 2018).

[4]. Mark Wheeler, "Nicolaus Copernicus," January 1, 1991, *Catholic Answers*, https://www.catholic.com/magazine/print.edition/nicolaus-copernicus (accessed May 14, 2018).

[5]. "Nicolaus Copernicus," August 5, 2015, *The Stanford Encyclopedia of Philosophy*, https://plato.stanford.edu/entries/copernicus/ (accessed May 22, 2018).

[6]. John Hagen, "Nicolaus Copernicus," n.d., *The Catholic Encyclopedia*, http://www.newadvent.org/cathen/043526.htm (accessed May 9, 2018).


NICOLAI
COPERNICI TO-
RINENSIS DE REVOLVTIONI-
bus orbium cœleſtium,
Libri VI.

IN QVIBVS STELLARVM ET FI-
XARVM ET ERRATICARVM MOTVS, EX VETE-
ribus atq; recentibus obſeruationibus, reſtituit hic autor.
Præterea tabulas expeditas luculentasq; addidit, ex qui-
bus eoſdem motus ad quoduis tempus Mathe-
matum ſtudioſus facillime calcu-
lare poterit.

ITEM, DE LIBRIS REVOLVTIONVM NICOLAI
Copernici Narratio prima, per M. Georgium Ioachi-
mum Rheticum ad D. Ioan. Schone-
rum ſcripta.

Cum Gratia & Priuilegio Cæſ. Maieſt.
BASILEAE, EX OFFICINA
HENRICPETRINA.

Let Them LOL's Hope Rising Academy
By Peter Acara

As many of you may know my wife Katie and I have been involved in a local non-profit organization named Let Them LOL. Their goal is to empower people in the small, poor, war-ravaged country of Sierra Leone, through clean water wells, education, and community development. For a few years I have had the dream of taking our collective love of the heavens to the students of Let Them LOL's Hope Rising Academy, and this September I will be able to start this journey.Sierra Leone can often be a hard place to find hope. As a result of a brutal 10-year civil war, they are close to the bottom of most lists that measure the development of a nation. They also have been stripped of their abundant natural resources over the years, with very little to show for it. Even after the war has ended, they have suffered through many administrations of corrupt government officials. In the midst of these trials, we have been introduced to a beautiful, resilient people that are proud of their country, and looking for a way to stand on their feet again.

Katie and I will be traveling to Sierra Leone for a week, and I will have the opportunity to present 2-3 astronomy workshops to the high school students. The goal of these sessions will be to broaden their knowledge of astronomy, and even show them what mankind is doing to explore space. My hope is that through learning new topics in the science world they will be able to dream even bigger for their future. I will also be able to do a workshop with the teachers so that they can include more astronomy education in their curriculum. As of right now, I do believe that constellations are taught to the students, and I think the teachers will really love diving deeper into the subject. While our trip may not seem like much, I feel that this is the beginning of a much greater journey that we can all collectively take. The exciting thing is that the US team of Let Them LOL have daily/ weekly communication with our staff of Sierra Leone nationals. So while this is a remote part of a third-world country, we can continue to communicate with the students and teachers on a fairly regular basis.

We would love for you to be involved with the trip. If you have any small, astronomy education

related items that you would like to donate, please contact me at petercubic@gmail.com. If you would like to make a monetary donation to help send supplies along with Katie and I, please visit https://my.letthemlol.com/SLAstro18. There are details on the site that will let you know what items we are raising money for.Thank you so much for taking the time to read this. I can't wait to see what this journey holds for all of us.

- Peter Arcara

DONATION

2018 Buffalo Astronomical Association Observatory Fundraising Campaign

To Enhance Astronomy and Science Education

The BAA is raffling off a Telescope (1st Prize) and a pair of Astronomical Binoculars w/Tripod (2nd Prize) in order to raise money for improvements to our Observatory at our Dark Sky location (Beaver Meadow).

- Tickets cost $10 and all proceeds will be used for the observatory project.
- Winners will be chosen on August 17, 2018 during the "Astronomy on the Pointe" event at Wilkeson Pointe.
- The winners do not need to be present to win.

1st PRIZE: Orion Skyline 8" Dobsonian Telescope

- This is an excellent telescope for any visual observer.
- 8" Aperture with 1200 mm focal length (f6) will provide excellent views of the Moon, planets and many interesting Deep Sky Objects (Nebulae, Star Clusters, & Galaxies)
- Includes: 2" Dual-speed focuser, 2" 30 mm Erfle eyepiece, 1.25" 9 mm Sirius Plossl Eyepiece, 8 X50 Right Angle Finder Scope, Laser Collimator, cooling fan, and eyepiece rack.
- Also included is a padded carrying case for the telescope tube.
- A 1-year family membership to the BAA and a copy of "Turn Left at Orion" to help you get the most out of your telescope.

2nd PRIZE: Orion 15x70 Astronomical Binoculars with HD-F2 Tripod

- A complete binocular and tripod setup ideal for astronomical or terrestrial viewing.
- 15x magnification and 70 mm lenses provide powerful magnification and light gathering.
- Stable and adjustable Orion Paragon HD-F2 tripod to keep binoculars steady while viewing.
- A 1-year family membership to the BAA and a copy of "Nightwatch: A Practical Guide to Viewing the Universe" to help you get the most out of your binoculars.

2018 Election Results:

President	Mike Humphrey
Vice-President:	Dennis Bartkowiak
Treasurer:	DaRand Land
Secretary:	Neal Ginsberg
At Large Director	Ernie Jacobs

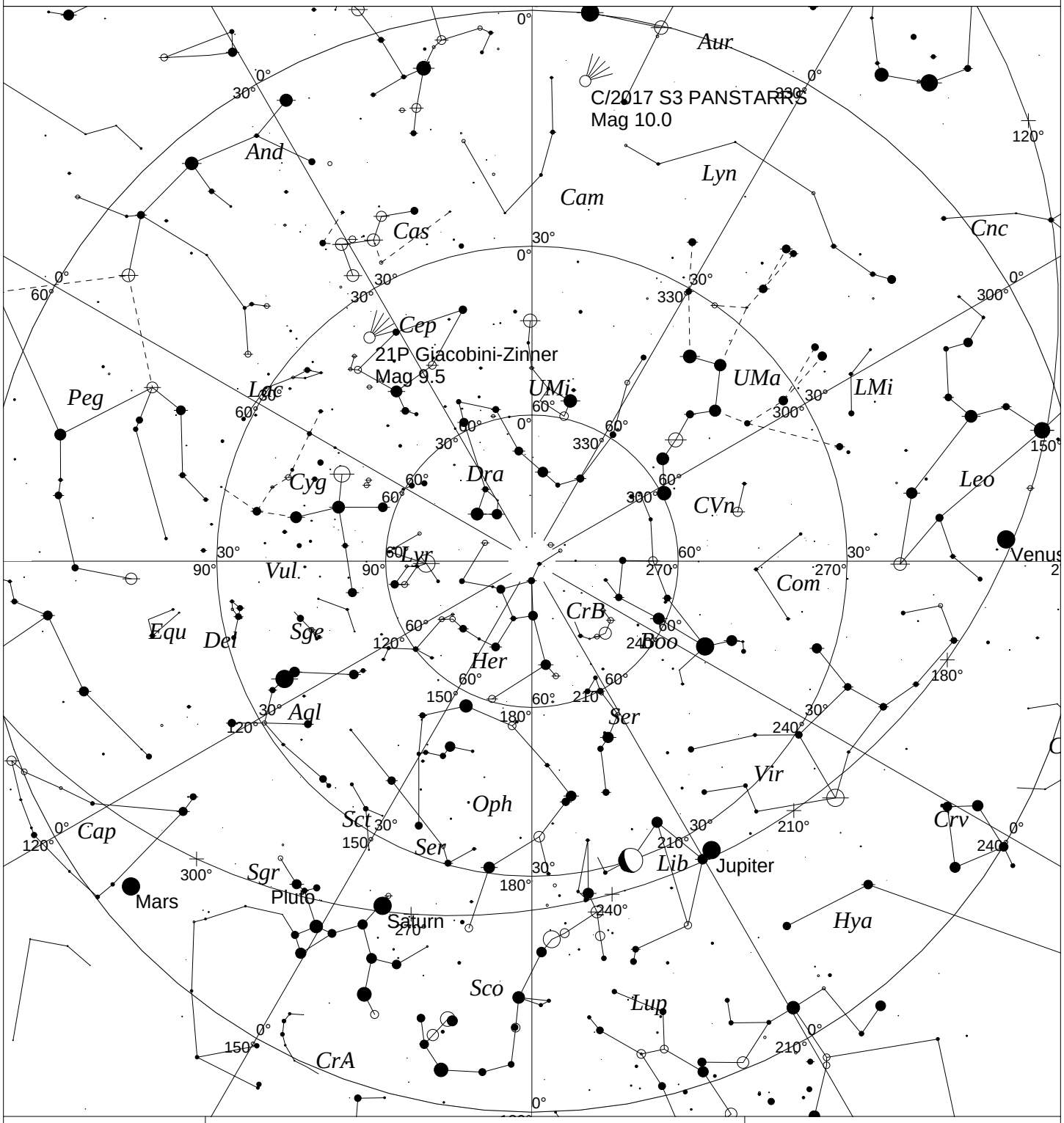
Congratulations to all

Star Party at Larry Carlino's House!

Hi All,
I'm planning a star party for BAA members and families on Friday, August 10, from 8PM to midnight at my home in the Town of Lockport.
The event will be held rain or shine. I have about 4 dozen scopes ranging from a 72mm refractor to a 28-inch Dob. My location is fairly dark, so deep-sky observing will be possible along with some views of Jupiter, Saturn, Mars, and (hopefully) Pluto.

My address is: 7118 Kinne Rd., Lockport, NY 14094
phone: (716) 433-3432
e-mail: astrozelle@verizon.net

Beaver Meadow 7/21/2018 22:00:00

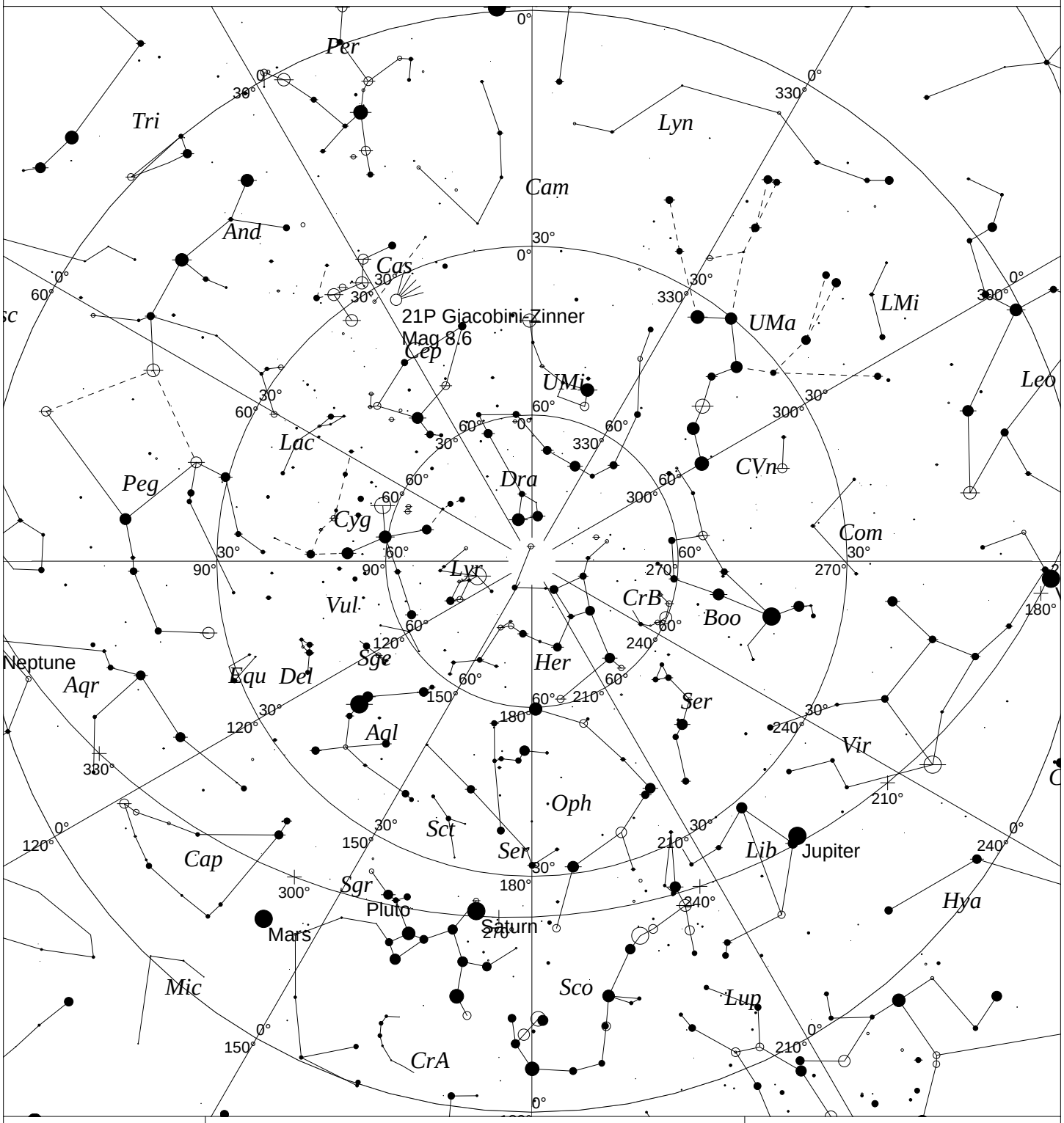


STARS				SYMBOLS				
<1	3.5	Multiple star	Dark nebula	Radio source
1.5	4	Variable star	Globular cluster	X-ray source
2	4.5	Comet	Open cluster	Other object
2.5	>5	Galaxy	Planetary nebula	
3		Bright nebula	Quasar	

Local Time: 22:00:00 21-Jul-2018 UTC: 02:00:00 22-Jul-2018 Sidereal Time: 16:43:08

Location: 42° 59' 35" N 78° 59' 34" WRA: 16h43m09s Dec: +42° 59' Field: 182.0° Julian Day: 2458321.5833

Beaver Meadow 8/4/2018 22:00:00

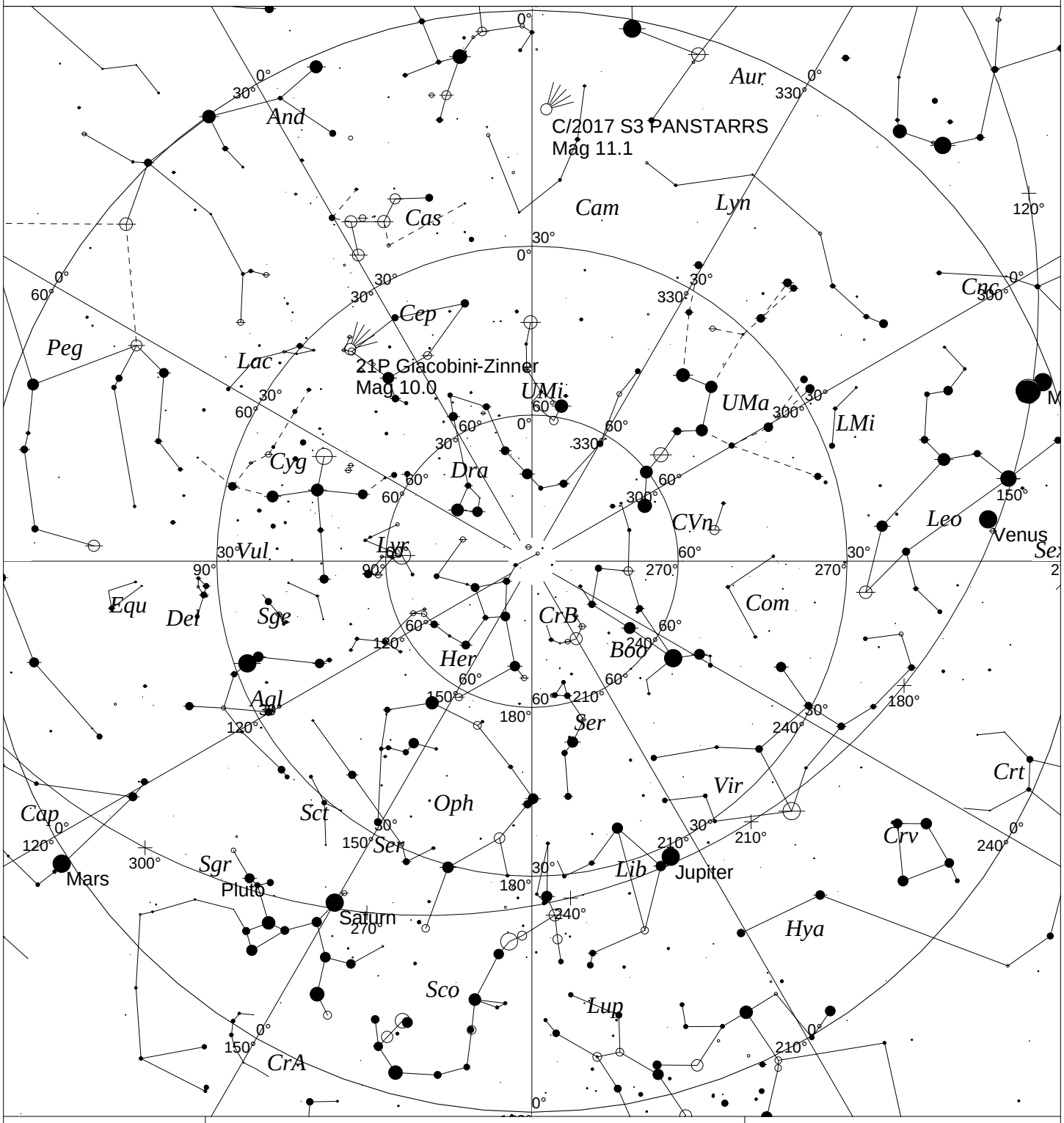


STARS			SYMBOLS		
<1	3.5		Multiple star	Dark nebula	Radio source
1.5	4		Variable star	Globular cluster	X-ray source
2	4.5		Comet	Open cluster	Other object
2.5	>5		Galaxy	Planetary nebula	
3			Bright nebula	Quasar	

Local Time: 22:00:00 4-Aug-2018 UTC: 02:00:00 5-Aug-2018 Sidereal Time: 17:38:49

Location: 42° 52' 48" N 78° 52' 12" WRA: 17h38m50s Dec: +42° 52' Field: 182.0° Julian Day: 2458335.5833

Wilson Star Search 7/14/2018 22:00:00



STARS

<1	3.5
1.5	4
2	4.5
2.5	>5
3	

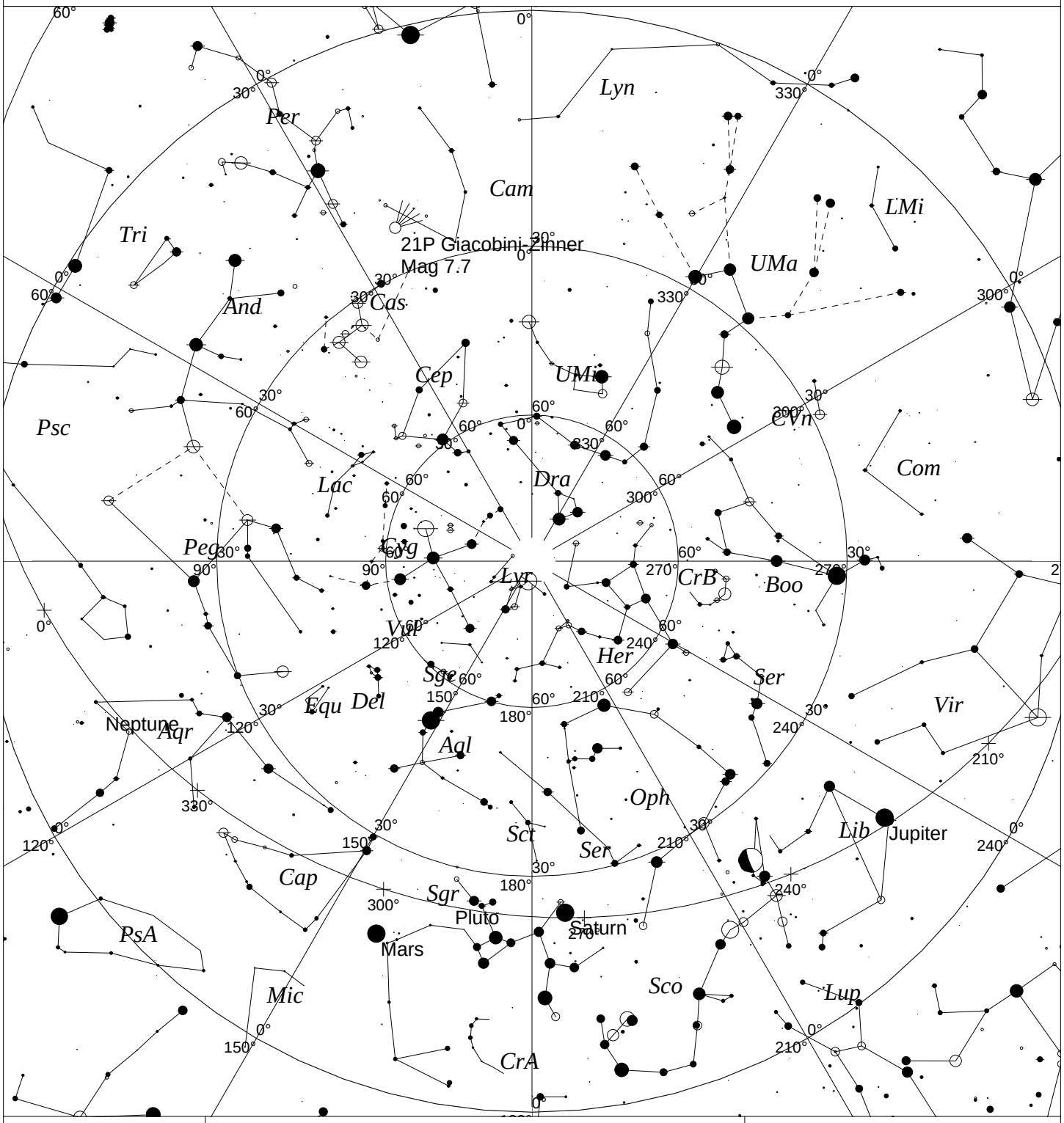
SYMBOLS

Multiple star	Dark nebula	Radio source
Variable star	Globular cluster	X-ray source
Comet	Open cluster	Other object
Galaxy	Planetary nebula	
Bright nebula	Quasar	

Local Time: 22:00:00 14-Jul-2018 UTC: 02:00:00 15-Jul-2018 Sidereal Time: 16:16:12

Location: 43° 18' 35" N 78° 49' 34" WRA: 16h16m13s Dec: +43° 18' Field: 182.0° Julian Day: 2458314.5833

Beaver Meadow/ Wilson Star Search 8/18/2018 22:00:00



STARS				SYMBOLS				
<1	3.5	Multiple star	Dark nebula	Radio source
1.5	4	Variable star	Globular cluster	X-ray source
2	4.5	Comet	Open cluster	Other object
2.5	>5	Galaxy	Planetary nebula	
3		Bright nebula	Quasar	

Local Time: 22:00:00 18-Aug-2018 UTC: 02:00:00 19-Aug-2018 Sidereal Time: 18:33:32
Location: 42° 59' 35" N 78° 59' 34" WRA: 18h33m32s Dec: +42° 59' Field: 182.0° Julian Day: 2458349.5833

THE BUFFALO ASTRONOMICAL ASSOCIATION

(BAA) welcomes you to our organization.

The BAA is a group of dedicated amateur astronomers, most of whom are observers, but some are armchair astronomers, and imagers.
The benefits of membership are:

- Access to our Dark Sky observing site in North Java -- a great place to observe the universe!
- A telescope loaner program -- borrow a BAA telescope and try observing for yourself!
- A monthly kids meeting, site orientation meeting, and general meeting with speakers of interest. Access to meeting videos on the BAA web site. - Opportunities to participate in programs that promote astronomy to the general public (such as Star Parties)
- Meet other amateurs and share experiences, learn techniques, and swap stories.

The BAA is a non-profit corporation organized under section 501 (C) 3 of the Internal Revenue Code. The Society was formed for education and scientific purposes. All contributions and gifts are deductible for federal income tax purposes. General membership meetings are open to the public and attendance is encouraged.