

Newsletter of
The Black River Astronomical Society

Guidescope

Lorain County, Ohio

June 2016

Website: blackriverastro.org

Newsletter submissions: [Editor](#)

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- Friday, May 27, 10 p.m.-midnight: Public observing, Nielsen Observatory (cloud backup date Saturday, May 28)
 - Sunday, May 29, 1 p.m.: Nielsen Observatory cleanup day
 - Wednesday, June 1, 7 p.m.: Regular Meeting, Carlisle Visitors Center "Understanding Right Ascension" by Len Jezior
 - Friday, June 3, 10p-midnight: Public observing, Nielsen Observatory (cloud backup date Saturday, June 4)
 - Thursday, June 9, 7 p.m.: Board Meeting, Blue Sky Restaurant, Amherst, OH
 - Saturday, June 11, 5 p.m. - ?: CVAS OTAA, Chagrin Valley Observatory
 - Friday only, June 24, 10p-midnight: Public observing, Nielsen Observatory (note: there will be no backup observing Saturday)
 - Sunday, June 26, noon-6 p.m., World Wide Solstice Festival, Mill Hollow Reservation, Bacon Woods
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Wanted: Contributions for the *Guidescope*

If you have anything you'd like to share with the local amateur astronomy community via this newsletter please send it my way for inclusion in upcoming editions. Anything astronomy-related is welcome, and either objective or subjective content is fine. An e-mail link for submissions is [here](#).

And many thanks to all who've been contributing photos and articles.

Visit Our Website

Explore the informative BRAS [website](#) and all its interesting, timely [links](#), and join the interactive members-only [BRAS Forum](#) to better keep in touch.

FOR SALE: 10" red Coulter Dobsonian telescope, including accessories and eyepieces. Asking \$250.00 for everything. Call Bob Stilgenbauer at 440-244-3929 for more details.

FOR SALE (only to BRAS members at regular meeting):

2--100mW green lasers (new)

Includes chargers, key lock, "Safety Shield", beam adjustment.

Momentary button trigger, 100% duty cycle. Single 3.7v lithium ion rechargeable battery.

Easily adaptable as telescope guide device. (Fits small guidescope mount.)

\$40 each.

Special purchase for astronomy club members only.

If interested see Len Jezior at next regular meeting June 1st.



BOARD SUMMARY

May 12, 2016

The meeting was called to order at 7:02 p.m. at the Blue Sky Restaurant, with nine Directors present. Committee Reports came first with the minutes from the April meeting read and approved as was the Treasurer's report. Guidescope editor Bill Ruth reported that the newsletter was status quo. He has had some submissions, but he would like more from club members. The Website is also reported to be functioning well, with the only issue being the ephemeris which is not updating automatically as it should. Lee Lumpkin will have that fixed by the end of the month. Instrumentation is also status quo with everything in the observatory running well except for the digital setting circles on the Losmandy mount, which seem to have an encoder problem. We are not opening both roofs due to birds nests on the outside of the roof rails that currently have baby birds in them. The babies should be gone by the end of the month and the nests will be removed during our spring observatory clean-up session over Memorial Day weekend. The Metro Parks Liaison had no report.

Programming is set through October. Programs are as follows:

June	Len Jezior	Understanding R.A.
July	Denny Bodzash	10 Unsolved Mysteries of Cosmology and Astronomy
August	Barb Hubal	Spectroscopy
September	Dave Lengyel	Member photos of the transit of Mercury
October	Elections and Annual Meeting of the Members / Short Programs	
November	Open	
December	Christmas Pot Luck Dinner and Party	

Old Business came next with the LCMP Paddle and Pedal Festival being

discussed first. The event is at Lakeview Park on May 15th and goes from 11:00-3:00 with setup starting at 10:00. We will do solar observing, and we will hand out club literature, and have displays and demonstrations. The LCMP will have a pop-up tent for us and Schauer will also bring one. Six people have volunteered to attend and represent the club.

Next came a discussion of our annual spring observatory clean-up. We need a few Board members to help clean and organize the building, but the primary task is to review the club property brought over by John O'Neal before he moved and to decide what to discard, what to offer to club members and what we might sell. There is currently too much clutter in the building that is unnecessary. The session will be on Sunday, May 29th starting at 1:00 p.m. and is rain or shine.

The final item of Old Business is further planning for the World Wide Solstice Festival on June 26th at the LCMP Mill Hollow Reservation. Preliminary contact has been made with Bruce Van Dyke of WEOL in the hope of getting a radio interview a week before the event like they gave us last year. There has also been contact with the *Morning Journal* about an article to publicize the event.

Contact has been made with Chubby's Bar B Que who will again provide food. We will put our live bands in the large shelter like we did last year. We will once again display the World's Largest Portable Sundial, and we will again show NASA solar videos. Decisions that still need to be made include where to put the solar telescopes, where to put the pop-up tents that will house the club materials and handouts, and the solar interactive displays and demonstrations. There are several changes from the event last year. One is that we do not have access to the Carriage House which is the building closest to the parking lot, as it was reserved for a private party before we reserved our date. We have the entire south side of the park for our use except the Carriage Barn. Since we had our solar videos in the Carriage Barn last year, those will be moved to the Summer Kitchen of the Buell House which is where we had the art display last year. Because we only have access to one building, we will not have any art displayed this year, although we plan to do so next year. The other change is that some of the interactive solar demonstrations we used last year belong to John O'Neal who has moved out of state. We have two that we own that we will use. We will also do our Planet Walk again, and of course we hope to have as many solar telescopes as possible. Planning continues.

This is the club's biggest event of the year, and is part of literally world wide solstice celebrations being organized by the Solar Activity group run by Randy and Pam

Shivak, who are former BRAS members currently living in Arizona, John O'Neal, and the BRAS. We will need member help. If you have a solar telescope of any type, please bring it. If you can help with demonstrations, monitoring the solar videos, or greeting the public, please volunteer at the June General Meeting or contact the President, Steve Schauer, at BRASPres@gmail.com.

New Business followed with the Amherst Library Summer Reading Program the first item of discussion. We have been invited to do solar viewing outside and give out club information and do programs inside. We have done this in the past and the Amherst Library people are wonderful to work with. This year we were presented with two possible dates for the event that were both in June. After much discussion, the Board voted to not do the event...at least in June, as it is our busiest month, with members doing BRAS events every weekend. We will try to schedule something with them later in the summer.

The next discussion was about the Annual Meeting of the Members which is the General Meeting in October. Our By-Laws require us to elect Board members in October and to use that meeting for other club business. This year, the terms of Dan Walker, Jeff Walsh, Micky Hasbrook and Steve Schauer will expire. Once Board members are elected they retire into another room and elect officers from within the Board. While this is being done, we discussed what kind of short program to present. It is tentatively decided to have Lee Lumpkin review the BRAS website, discuss member participation in our Forum and demonstrate how it works and to review our TNS or Text Notification System. It is hoped we can sign people up for either of these right at the meeting. We also want to solicit club members' opinions about programming topics that they would be interested in, and club events or activities they would like to suggest.

The next item was to vote to accept Mike Garrett of Oberlin as a new member, which was done. Welcome Mike!

There followed a brief discussion of the BRAS OTAA Convention in September. The hall in Birmingham has been confirmed and we also received an update on door prizes from Jeff Walsh.

The final item of New Business was a motion to reimburse Lee Lumpkin for money spent for rental of our website, which passed unanimously.

Dates for June were set, and the meeting was adjourned.

~Steve Schauer



Mercury transit, May 9, 2016, 6:19 a.m. (Mercury is the tiny dot near limb at 7:30 position).
Photo by Dave Lengyel

The Summer Solstice and Size of the Earth In 2300 B.C.

This month brings the summer solstice, the longest day of the year (for us north of the equator) and the official start of the summer season. For many, this serves as a chance to celebrate what is, for many people, their favorite season. For astronomers, and especially those interested in the history of the science, the summer solstice also marks a major anniversary in the quest to understand the universe and our place in it.

The story goes that Ferdinand Magellan, in undertaking his voyage that would eventually take him or at least his surviving crew) around the world, proved once and for all that the Earth was spherical rather than flat. Well, if Magellan was to be credited with anything, it would be, at most, rediscovering that the Earth was spherical as this fact was known nearly 2,000 years earlier by the ancient Greeks. Not only did the Greeks know the Earth was spherical, they knew its approximate size, too.

So, how did all of this come about?

The tale of how the Greeks measured the circumference of the Earth is quite interesting, to say the least. At this time in Egypt, the Greek line of pharaohs (descended from Ptolemy, of which Cleopatra was the last), ruled from the new city of Alexandria, which was designed from the start as a Greek city. In this city stood a wonder of the ancient world that most people forget: the Library of Alexandria. While not able to hold a candle to, say, the Great Pyramid, in terms of structure, the wonder of the library was what was inside: scrolls, at the peak, perhaps about a million of them, a truly awesome amount of knowledge for the time. In the mid 200s B.C., a man named Eratosthenes was chief librarian.

Eratosthenes was a true renaissance man: he was an astronomer, historian, mathematician, writer, geographer, and educator. However, it was because of his curiosity and interest in science that Eratosthenes would come to be remembered for the ages.

No one knows how Eratosthenes came across the story of the well near Syene, located in southern Egypt, but this is how it went. In Syene, there was a well so deep that its bottom could only be seen at noon on the Summer Solstice, the longest day of the year when the Sun was directly overhead. At the same time, columns and obelisks cast no shadows, either. However, in Alexandria right on the Mediterranean Sea where Eratosthenes resided, no such phenomenon occurred as there were obvious shadows at noon on the longest day of the year. Being curious, Eratosthenes sought to find out why.

For an intelligent man, the problem of why there were shadows in Alexandria and not in Syene was relatively easy to solve: the Earth was spherical. In the same vein, this idea could also be used to explain why you could see stars in Egypt that you couldn't see in Greece. The world now known (at

least to him) to be spherical, Eratosthenes had another, even bigger question: how big is the Earth?

The answer would not be so easy to find this time.

To get an idea of how big the Earth was, Eratosthenes knew that he would need to find out how far Syene was from Alexandria and what percentage of a circle was involved. Finding the percent of a circle was relatively easy. Eratosthenes knew that, at noon on the summer solstice, the Sun's rays were coming straight down at Syene, but in Alexandria, they were not as the Sun was not directly overhead. To find the angle of the Sun, Eratosthenes measured the heights of shadow casting objects, measured the shadows, then used basic geometry to calculate the degrees involved. As it turned out, the Sun was 83 degrees up at noon on the solstice in Alexandria.

Knowing that the difference in the Sun's angle from Alexandria to Syene was 7 degrees, or about $1/50^{\text{th}}$ of a circle, now all Eratosthenes needed to do was find out the distance between the two cities.

Easier said than done!

Back in the time of Eratosthenes, there were no such things as odometers as they were not invented until Roman times. Instead, at the time, specially trained men would actually pace out the distance between two places on foot. The largest unit of measurement in place at the time was the stadia, roughly equivalent to 500 feet, or just under $1/10^{\text{th}}$ mile. Obviously, if Eratosthenes was to find the difference between the cities, someone would have to pace out essentially all of Egypt! Having come this far, Eratosthenes wasn't going to stop now, so he hired a man (the payment is lost to history) to pace out the distance. Even more amazing than the idea that a man paced out the distance from one end of Egypt to the other is that he was very close, as evidenced by the calculation Eratosthenes came up with, which was within 2% of the Earth's true circumference of just under 25,000 miles.

Not bad for over 2,000 years ago!

Now that the world was not only known to be spherical, but also how big it was, it is especially sad that the classical civilization of the Greeks and Romans, and all of their learning accumulated over the centuries, collapsed into the Dark Ages after the fall of Rome in A.D. 476, plunging Western Europe into a millennium of ignorance to the point that, by the end of the Middle Ages, people would once again believe that the world was flat.

~Denny Bodzash