

Newsletter of
The Black River Astronomical Society

Guidescope

Lorain County, Ohio

March 2020

Website: blackriverastro.org

Newsletter submissions: [Editor](#)

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Please remember to check the website blog for any weather-related cancellations of meetings or observing sessions.

--Wednesday, March 4, 7 p.m.: Regular meeting, Carlisle Visitors Center.
Measuring Distances in Space, by Dave Lengyel

-Thursday, March 12, 7 p.m.: Board meeting, Blue Sky Restaurant, Amherst

--Friday, March 13, 8-10 p.m.: Public observing Nielsen Observatory (cloud backup date Saturday, March 14, 8-10 p.m.)

--Friday, March 20, 8-10 p.m.: Public observing Nielsen Observatory (cloud backup date Saturday, March 21, 8-10 p.m.)

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Visit Our Website

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

Guidescope Contributions Wanted

If you have any astronomy-related wanted/for sale announcements, photos you've taken, interesting article links, equipment reviews, observing reports, essays, or anything to which that you think the local amateur astronomy community could relate, please send it to your [humble Guidescope editor](#) for inclusion in forthcoming issues.

BOARD SUMMARY February 13, 2020

The February Board meeting was called to order at 7:07 p.m. with eight Directors present. The minutes of the January meeting were read and approved as was the Treasurer's report. Committee reports followed with *Guidescope* editor Bill Ruth reporting that all was well and that he had some submissions. The Website seems to be operating properly, and the Instrumentation Chairman, John Reising reported that the last time anyone had been to the observatory, all instruments were in fine shape. OTAA dates have not changed since the last meeting so there was no OTAA report. The Metro Parks Liaison reported that the LCMP had been contacted about a few small problems at the observatory that they will correct when the weather breaks in the Spring.

Programing is as follows:

March	Dave Lengyel	Measuring Distances in Space
April	Ed Burcl	Asteroid Mining
May	John Reising	Life of William Herschel
June	OPEN	
July	TBD	Trip to Pahrump
August	John Reising	Mars Opposition
September	OPEN	
October	Elections/Annual Meeting of the Members/short video	
November	tentative	Oberlin College Planetarium visit
December	Annual Holiday Pot Luck Dinner at the Amherst Beaver Creek Reservation	

Anyone interested in doing a program for either June or September should contact any Board member of the President (Schauer) at BRASPres@gmail.com

Old Business followed, with the first item a discussion of possible programs for June and September. Some ideas and topics were discussed, but no decisions were made. We will revisit the topic next month.

The second topic was initial planning for work sessions at the observatory, once the weather warms up and the spring rains end. We need to do a full inventory of all items there and compare the results to the computerized inventory we currently have. We know our computerized inventory is not up to date. Board members and others who have been storing club items at home, will need to bring them to the observatory fairly soon. Once we have an accurate inventory, we need to decide what items to keep, what items to offer for sale (to club members first, then the general public), what items to give away, and what to discard. Once we know what we wish to keep, we need to decide how to best store those items in either the observatory building or the storage building. This will inform how we equip the storage building with shelves, plastic bins and a loft to hold larger items we don't use often. Greg Cox also reminded us that he is storing the club archives at his home. Our archives include some books and magazines, but also many papers from the early days of the club, including letters written by William Mason. Mason was one of our founders, who constructed several fine telescopes (one currently owned by Dave Lengyel), and who corresponded with amateur and professional astronomers all over the world. These we obviously want to store carefully.

A second work session will need to be our annual clean-up session, probably in May, when we clean the buildings and do minor maintenance work to the telescopes and other equipment. A final work session will be one where we finish the new 16" Newtonian. This scope, when finished, will be a computerized "push-to" scope, but we need to install the dec. motor and the encoders, a task for which we have no instructions or diagrams. We also need a 110 volt power cord.

Next came New Business with the first item a brief discussion of the Telescopes Live remote imaging program. This program allow people to request CCD photos to be taken on several somewhat large telescopes in several locations in the world. The procedure to do this is complicated, and the costs are rather high per photo, so the discussion was brief.

A second item was a notification to us from the Metro Parks about a planned Visioning Session to develop programming for the upcoming 2020 Black River Celebration. There will be a special section in the *Lorain Journal* on April 30 concerning the Black River, and organizations who impact the river or nature in general, are invited to this planning session on Thursday, March 12 from 9:00-10:30 a.m. at Lakeview Park. Greg Zmina agreed to check his schedule to see if he can attend.

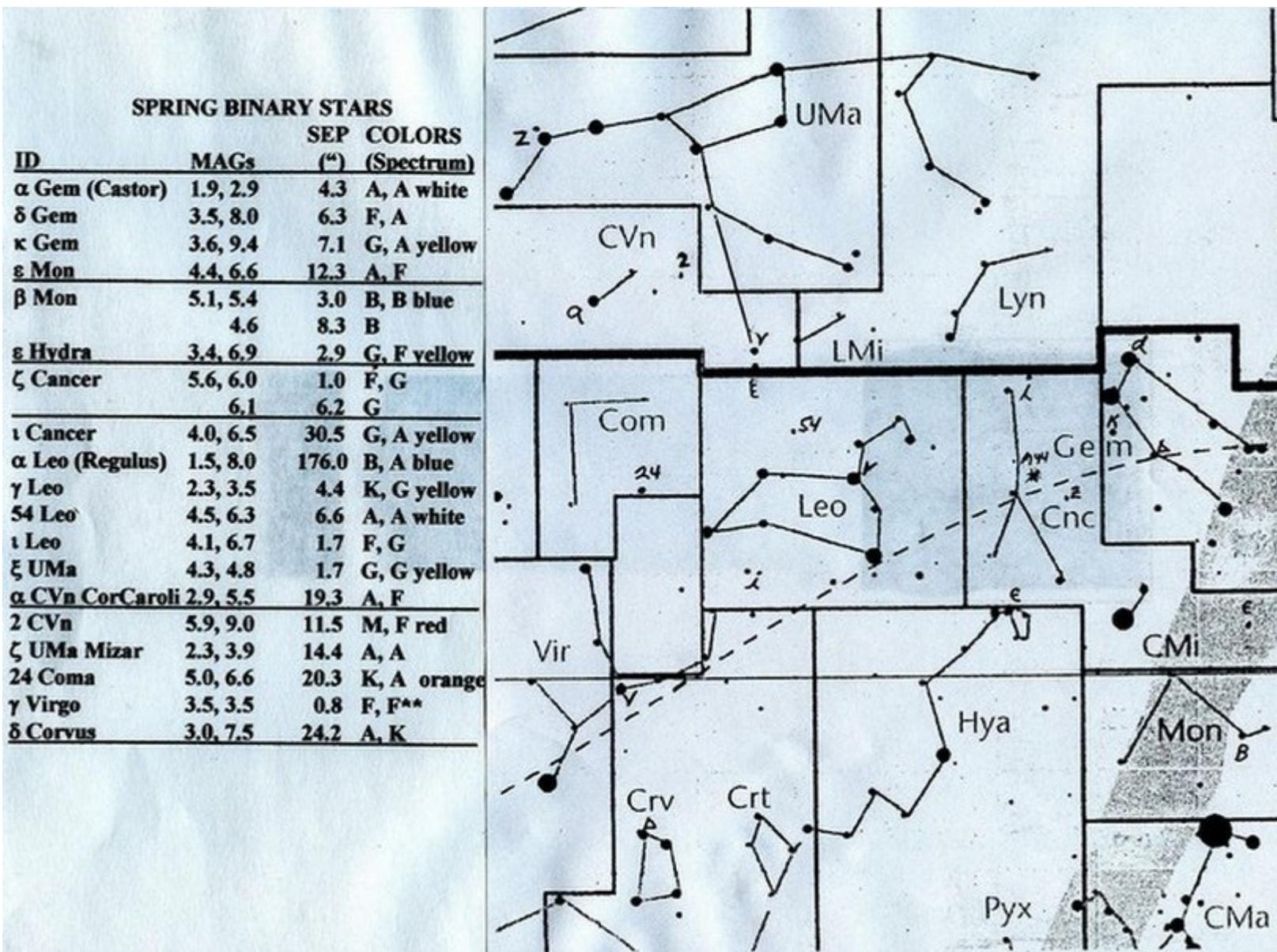
The next item of New Business was a reminder that the Avon Lake Parks and Rec. Dept is hosting its annual Dark Skies, Bright Kids program on Thursday, March 19th from 6:00-8:00 p.m. We participate in this every year, and a brief discussion of assignments etc. was held.

The final item of New Business was a sad announcement by Mickey Hasbrook that she is moving to Atlanta, Georgia. Mickey works at the Macy's Data Center in Lorain which is being closed, necessitating her move. Thus we are losing a good friend and a valuable and active Board member. Mickey brought the club laptop and another small telescope that she had been storing for the club to the meeting so she could pass those on. She also brought the "Magnetic Sun" toolkit that we use as a display at public events. The final act of the Board was to sell Mickey a 6" Dobsonian that she has been borrowing from the club so that she can continue observing after she moves. We will miss Mickey and

wish her the best. She will remain a club member and she hopes to return to our area when she retires in a few years.

Dates were set, and the meeting was adjourned at 8:24 p.m.

~Steve Schauer



Constellation of the month courtesy of John Reising

Deep-Sky Objects for March

Objects for Binoculars							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
08 ^h 13.1 ^m	-05°48'	M48	m5.8v	54'		Hya	Open Cluster, 80 stars
08 ^h 40.1 ^m	+19°57'	M44	m3.1v	95'		Cnc	Open Cluster 50 stars, "Beehive or Praesepe
08 ^h 50.4 ^m	+11°49'	M67	m6.9v	29'		Cnc	Open cluserter 200 stars
08 ^h 46.7 ^m	-28°46'	48 (Iota-1)	4.2, 6.6	30.5"	307°	Cnc	Double Star
13 ^h 23.9 ^m	+54°56'	79+80 (Zeta)	2.3, 4.0	14.4"	150°	Cnc	Double Star
Objects for Small Telescopes (2-6 inch)							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
06 ^h 26.8 ^m	+58°25'	5 Lyn	5.3, 9.8	31.4"	139°	Lyn	Triple Star (3 rd star 7.9, 96". 272")
08 ^h 52.7 ^m	+33°25'	NGC 2683	9.8v	8.4'x2.4'		Lyn	Galaxy, type SA(rs)b II-III
09 ^h 55.6 ^m	+69°04'	M81	m6.9v	24.0'x13.0'		UMa	Galaxy, type SA(s)ab I-II
09 ^h 55.8 ^m	+69°41'	M82	m8.4v	12.0'x5.6'		UM	Galaxy, IO
10 ^h 24.8 ^m	-18°38'	NGC 3242	m7.8v	>16"		Hya	Plan. Neb. "Ghost of Jupiter"
Objects for Medium-Size Telescopes (8-14 inch)							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
08 ^h 26.8 ^m	+26°56'	23 Cnc (Phi-2)	6.3, 6.3	5.1"	218°	Cnc	Double Star
08 ^h 33.4 ^m	-16°09'	NGC 2610	m12.8v	37"		Hya	Planetary Nebula
08 ^h 48.3 ^m	+00°33'	OE194	7.3, 10.8	12.6"	56°	Hya	Double Star
08 ^h 49.2 ^m	+60°13'	NGC 2654	m11.8v	3.8'x0.7'		UMa	Galaxy, type SBab: sp II-III
09 ^h 10.3 ^m	+07°02'	NGC 2775	m10.1v	4.6'x3.7'		Cnc	Galaxy, type SA(r)ab
09 ^h 31.5 ^m	+63°04'	23 UMa	3.7, 8.9	22.7"	270°	UMa	Double Star
09 ^h 32.2 ^m	+21°30'	NGC 2903	m9.0v	12.0'x5.6'		Leo	Galaxy, type SAB(rs)bc I-II
Objects for Larger Telescopes (16-inch & larger) Challenge Objects							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
07 ^h 38.1 ^m	+38°53'	NGC 2419	m10.3v	4.1'		Lyn	Glob. Cl. "Intergalactic Wanderer"
08 ^h 14.7 ^m	+49°04'	NGC 2541	m11.8v	7.4'x3.3'		Lyn	Galaxy, type SA(s)cd
08 ^h 54.2 ^m	+08°55'	PK219-31.1	m12.0v	>980"		Cnc	Planetary Nebula (use O-III filter)
08 ^h 54.2 ^m	+30°35'	57 Cnc (Iota-2)	6.0, 6.5	1.4"	316°	Cnc	Double Star
09 ^h 19.8 ^m	+33°44'	NGC 2832	m11.9v	3.0'x2.1'		Lyn	Galaxy, type E+2: (In Abell 779 galaxy group)
09 ^h 45.7 ^m	-14°20'	NGC 2992	m12.2v	4.0'x1.2'		Hya	Galaxy, type SO pec sp
09 ^h 45.8 ^m	-14°22'	NGC 2993	m12.6v	3.3'x1.8'		Hya	Galaxy, type IO? Pec

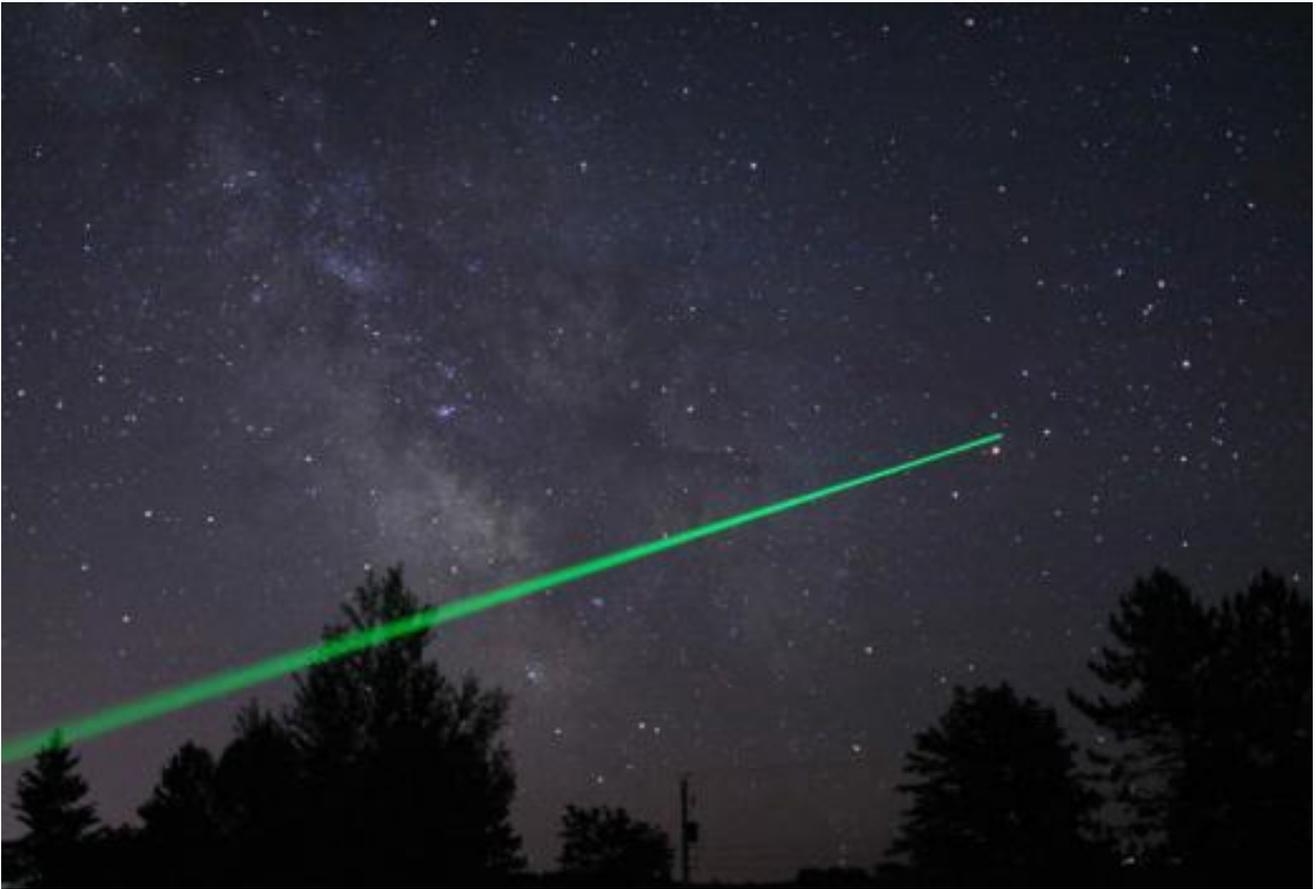
Print and use the [Deep-Sky Interest Group - Observation Form](#) to record your observations.

Deep sky objects list courtesy of Len Jezior



Mercury, just above the horizon, and Venus, upper left 2/14/20 just before 7 p.m. ~Dave Lengyel

Green Laser Pointers for Astronomy



A 5 mW GLP beam aimed at a point near the star Antares. Light scattered back toward the camera made the beam visible. (R. Bishop photo)

The Royal Astronomical Society of Canada (RASC) is Canada's leading organization dedicated to astronomical education and public outreach. The mission of the RASC is to promote knowledge of our place in the universe, through publications, talks for the public, observations of the heavens, research, and facilitating monthly and annual meetings amongst its many members across Canada. This article has been prepared by the Society as a guide to the safe use of laser pointers under the night sky.

Advances in technology have benefited many aspects of astronomy, including public outreach. **Green Laser Pointers (GLPs)** are effective teaching aids for introducing people to the night sky. Also, amateur astronomers sometimes use GLPs as aiming devices on telescopes. At night the light beam of a GLP aimed into the sky is visible because the air scatters some of the light back toward observers on the ground.

Red laser pointers are not suitable for that purpose because red light is scattered less effectively than green light, bright-adapted vision is not very sensitive to red light, and dark-adapted vision is blind to dim red light. The peak sensitivity of the eye is in the green part of the spectrum, so the beam of a GLP is readily visible and may be used to direct attention to a star or a planet in the night sky.

GLPs can be dangerous. In the hands of individuals who do not understand the hazard or are socially inept, GLPs can be very dangerous. The danger is due to the extremely high luminance (surface brightness) of the laser diode in a GLP. That brightness, in turn, is a result of the very small angular divergence of the GLP beam. A beam having a power of only a tenth of a watt (100 mW) can cause permanent damage to vision by destroying portions of the retina if it is directed

toward the eyes of anyone near the GLP. At distances within a few kilometres, the extreme brightness of even a 5 mW GLP can cause serious distraction, momentary blindness, and afterimages. The consequences could be catastrophic if the beam is directed toward anyone whose attention is urgently needed elsewhere, such as the driver of a car or the pilot of an aircraft, especially at night.

How far can a laser beam reach? As is evident in the photo, a GLP beam aimed into the night sky ends at a definite point that appears to be not very far away. However, that appearance is an illusion resulting from the diffraction-induced, angular spread of the beam. To a GLP operator, or anyone else located near the vertex of the diverging beam, the *perceived* angular width of the beam does not become narrower with distance as it would if the beam were parallel. Consequently the far end of the nearly end-on beam appears to be relatively nearby, making the green shaft of light resemble a “Star Wars Lightsaber”, whereas the beam actually extends to the *vanishing point* of perspective, effectively at infinity.

Under a dark, clear sky, a GLP beam becomes invisible where there is nothing to scatter light back toward the observer. That occurs where the beam leaves Earth’s atmosphere. Atmospheric extinction is less than 0.5 magnitude, so the majority of the photons in the beam of a GLP aimed into a clear sky leave Earth and continue down the corridors of interstellar space. The beam’s reach is essentially infinite, although to a person in the beam looking back at the GLP, the angular spread of the beam makes the GLP appear less blindingly bright the further away it is. For example, a 5 mW (5 milliwatt, or 5 thousandths of a watt) GLP aimed at the International Space Station passing 400 km overhead will look about as bright as the planet Jupiter to astronauts on the ISS.

In recognition of the danger, under the Canadian *Aeronautics Act* anyone convicted of intentionally aiming a GLP at an aircraft is subject to maximum penalties of a 5-year prison term and a \$100,000 fine. In the United States, shining a laser at an aircraft is a federal crime. Hundreds of such inane actions occur annually in North America, and several people have been caught and given prison terms.

A GLP is a safe and useful tool for education and public outreach in astronomy when used by a knowledgeable, mature person. Here are nine guidelines for GLP use:

- 1. Never point a GLP at any person, vehicle, aircraft, or wildlife.**
- 2. Do not use a GLP within 10 km of an airport. The chance of an unintended flashing of an aircraft is significant near an airport.**
- 3. As a teaching aid under a dark sky, a GLP that emits a light beam of power 5 milliwatts (5 mW) is adequate. Powers of 10 to 30 mW are better under brighter urban skies, and for instructing a large group. GLPs of more than 30 mW should be avoided because of the greater risk of irreversible damage to vision. In the United States 5 mW is the legal limit imposed by the Food and Drug Administration (FDA). In the United Kingdom, 1 mW is the legal limit.**
- 4. When using a GLP as a teaching aid under a dark sky, before pointing at a star or planet, be certain that it is a star or planet and not the light of an aircraft.**
- 5. As soon as you have pointed out an object, turn the GLP off; the purpose is astronomy, not a distracting laser-light-show.**
- 6. To avoid accidental eye exposure, while a GLP is operating, hold it overhead and pointed skyward.**
- 7. Do not let a child handle a GLP, or anyone who is not aware of the hazards.**
- 8. Store a GLP in a secure place, away from children and anyone else who might misuse the device. To be extra safe, remove the batteries.**
- 9. Anyone attending a star party, or a site frequented by astrophotographers or those engaged in other types of astronomical data collection, should ask about GLP usage at the site, and govern the use or non-use of GLPs accordingly.**