Newsletter of
The Black River Astronomical Society
Guidescope

Lorain County, Ohio **April 2017**
Website: blackriverastro.org **Newsletter submissions: Editor**

--Wednesday, April 5, 7 p.m.: Regular meeting, at *SANDY RIDGE RESERVATION JOHNSON WETLANDS MEETING HOUSE, 6195 Otten Road, North Ridgeville* (please note this location change is for the April and May regular meetings!)
Program: Total Solar Eclipse of 2017 by Dan Walker and Steve Schauer

--Thursday, April 13, 7 p.m.: Board meeting, Blue Sky Restaurant, Amherst

--Friday, April 14, 9-11 p.m.: Public observing, Nielsen Observatory (cloud backup date Saturday, April 15)

--Friday, April 21, 9-11 p.m.: Public observing, Nielsen Observatory (cloud backup date Saturday, April 22)

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.

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Board Summary March 9, 2017

The Board of Directors meeting was called to order at 7:14 p.m. with 9 Directors present. Minutes of the February meeting were read and approved as was the Treasurer's report. Committee reports followed with the *Guidescope* editor Bill Ruth reporting that all was well, and John Reising promising to send a submission. Lee Lumpkin next reported that the website was running well and that he has contacted John O'Neal who has transferred the domain name over to Lee. Lee has also paid for the next three years of server space with Network Solutions. Under Instrumentation, there was a brief discussion of the observatory roof that seems to be leaking on the west side. The issue has been reported to the Metro Parks for repair. There was no OTAA or Metro Parks Liaison reports.

Programming is set as follows:

April	Dan Walker/Steve Schauer	Total Solar Eclipse Program.
May	Tim Kreja	History of Refracting Telescopes
June	Dan Walker	Motions-Guidescopes of the Cosmos
July	Denny Bodzash	Major Historical Discoveries
August-November		OPEN

Old Business followed. Walker and Schauer are doing an eclipse program at the April meeting. At that time they have detailed maps that show the eclipse path in Kentucky and Illinois that they will provide to any members who want them. They will also give five pairs of eclipse glasses to every member. If members want more glasses to sell, they may have as many as they wish with sales or returns on the honor system. We may also sell some at one of the bakeries in Oberlin.

Next, Mickey Hasbrook, Jeff Walsh and Dan Walker reported on the Dark Skies, Bright Kids event we attended in Avon Lake. Following that, the Keystone Elementary School Science Night was discussed. Dan Walker, Dave Lengyel, Mickey Hasbrook and Greg Zmina will attend and hand out club information and do demonstrations about the size of the universe. This is Friday, 3/31 from 6:00-9:00 in LaGrange.

The third item of Old Business was a discussion of starting the Night Hikes at the Wellington Reservation. Wellington has a new naturalist who has approached us about providing a small star party for the members who attend the night walks. We agreed to help out on Thursday March 30th from 8:00-9:30 p.m. Amy members interested in bringing a telescope and helping out should contact Lee Lumpkin or one of the officers.

Under New Business, the first item was to set our Solar Observing schedule for 2017. It is as follows:

May 21	11:00-3:00	Paddle and Pedal Festival	Lakeview Park, Lorain
June 17	12:00-4:00	International Solstice Festival	Lakeview Park
July 9	1:00-4:00	Public Solar Viewing	Sandy Ridge
Aug. 6	1:00-4:00	Public Solar Viewing	Sandy Ridge
Sept. 3	1:00-4:00	Public Solar Viewing	Sandy Ridge
Oct. 1	1:00-4:00	Public Solar Viewing	Sandy Ridge

The last item of New Business was the notification that our membership in the International Dark Sky Assoc. was expiring. We renewed and have sent a $50.00 donation. This donation was put into a motion by Lee Lumpkin and seconded by Dan Walker. The motion passed unanimously.

Dates were set, and the meeting was adjourned at 8:29 p.m.

~Steve Schauer

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Report from an Astronomy Guide and V.I.P.

Greetings from Chaco Culture National Historical Park! I've just finished my 3rd week as a park guide, and am already reeling over the depth and intensity of our skies here...not to mention the archeology! As the sun sets over the dramatic New Mexico landscape, it's easy to see why the mysterious Chacoans were such avid sky watchers. In an astronomy program I led on March 16th, the Winter Milky Way appeared every bit as dramatic as any summer view I've had, while the zodiacal light reached to zenith and was so bright as to (almost) be distracting. Among the many deep-sky treasures highlighted during my open-air program, I was able to give an eager crowd views of the Crab Nebula (M1) and connect it to the "Supernova Pictograph" (a possible Chacoan observation of the 1054 supernova that created M1) that many in the crowd had trekked out to visit that same day. The mood during observation was excited and curious, and all in attendance came away having seen something new.

"Supernova Pictograph" on the Peñasco Blanco Trail (photos by Kelly Ricks)

National Parks preserve some of our nation's best and most pristine dark skies. As more and more visitors come to the parks in search of a true dark-sky experience, the need for experienced, knowledgeable, and dedicated astronomy personnel is growing. If you've ever wanted to stay for a few weeks in a national park, immerse yourself in the story of a place, and share your passion with a diverse public from around the world, I recommend looking into a term as an Astronomy VIP (Volunteer in Parks). Many parks across the country are recruiting, and there are opportunities listed at volunteer.gov (type in "astronomy" as a search keyword). Three parks that have reached out to me specifically are Bryce Canyon, Bandelier National Monument, and Glacier National Park, but there are many more. In many cases, in-park housing is provided at no cost. If these locations are too far out of your way, or if you have a special affinity for another park or monument, chances are they're recruiting too! I encourage contacting park rangers directly and asking about what astronomy volunteer opportunities may exist.

Working and volunteering with the National Park Service has changed my life. The difference *you* can make is profound and well appreciated by visitors and park personnel alike. I can't recommend these opportunities highly enough. If you have any questions about volunteering, what it's like, and how to get connected, please feel free to email me at: kellyalenericks@gmail.com

Clear skies!
~Kelly Ricks

Fajada Butte Pre-Sunrise and Belt of Venus--the view from my front porch

Chaco Canyon Full Moon Rise

Deep-Sky Objects for April

Objects for Binoculars							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
$09^h41.2^m$	+09°54'	14-Omicron	3.5, 9.5	85.4"	44°	Leo	Double Star
$10^h08.4^m$	+11°58'	32-Alpha	1.4, 7.7	176.9"	307°	Leo	Double Star
$10^h16.7^m$	+23°25'	36-Zeta	3.5, 5.8	325.9"	340°	Leo	Double Star
$11^h25.6^m$	+16°27'	81 Leo	5.6, 9.2	55.7"	351°	Leo	Double Star
12^h25^m	+26°0'	Mell 111	1.8v	4.6°		Leo	Open Cluster
Objects for Small Telescopes (2-6 inch)							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
$10^h55.6^m$	+24°5.8'	54 Leo	4.5, 6.3	6.5"	110°	Leo	Double Star
$11^h5.8^m$	+00°02'	NGC 3521	m9.0v	12.5'x6.5'		Leo	Galaxy
$11^h18.9^m$	+13°05'	M65	m9.3v	8.7'x2.2'		Leo	Galaxy
$11^h31.7^m$	+14°22'	88 Leo	6.4, 8.4	15.4"	328°	Leo	Double Star
$11^h20.2^m$	+12°59'	M66	m8.9v	8.2'x3.9'		Leo	Galaxy
Objects for Medium-Size Telescopes (8-14 inch)							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
$10^h20.0^m$	+19°51'	41-Gamma	2.2, 3.5	4.4	125°	Leo	Double Star
$10^h20.3^m$	+13°36'	NGC 3628	m9.5v	14.0'x4.0'		Leo	Galaxy
$10^h44.0^m$	+11°42'	M95	m9.7v	7.8'x4.6'		Leo	Galaxy
$10^h46.8^m$	+11°49'	M96	m9.2v	6.9'x4.6'		Leo	Galaxy
$10^h47.7^m$	+13°59'	NGC 3377	m10.4v	4.1'x2.6'		Leo	Galaxy
$10^h47.8^m$	+13°25'	M105	m9.3v	3.9'x3.9'		Leo	Galaxy (with NGC3384 & 3389)
Objects for Larger Telescopes (16-inch & larger) Challenge Objects							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
$09^h48.6^m$	33°25'	NGC 3003	m11.9v	5.2'x1.6'		Lmi	Galaxy
$10^h13.8^m$	+38°46'	NGC 3158	m11.9v	2.3'x2.2'		Lmi	Galaxy (In Group)
$10^h29.3^m$	+29°30'	NGC 3254	m11.7v	4.9'x1.4'		Lmi	Galaxy
$10^h49.8^m$	+32°59'	NGC 3395	m12.1v	1.6'x0.9'		Lmi	Galaxy, 3396 attached
$10^h50.9^m$	+13°25'	NGC 3412	m10.5v	3.3'x2.0'		Leo	Galaxy
$11^h16.9^m$	+18°03'	NGC 3607	m9.9v	4.6'x4.1		Leo	Galaxy,(with 3605, 3608)
$11^h34.7^m$	+16°48'	90 Leo	6.0, 7.3, 87	AB 3.3 AC 63.1	209° 234°	Leo	Double Star

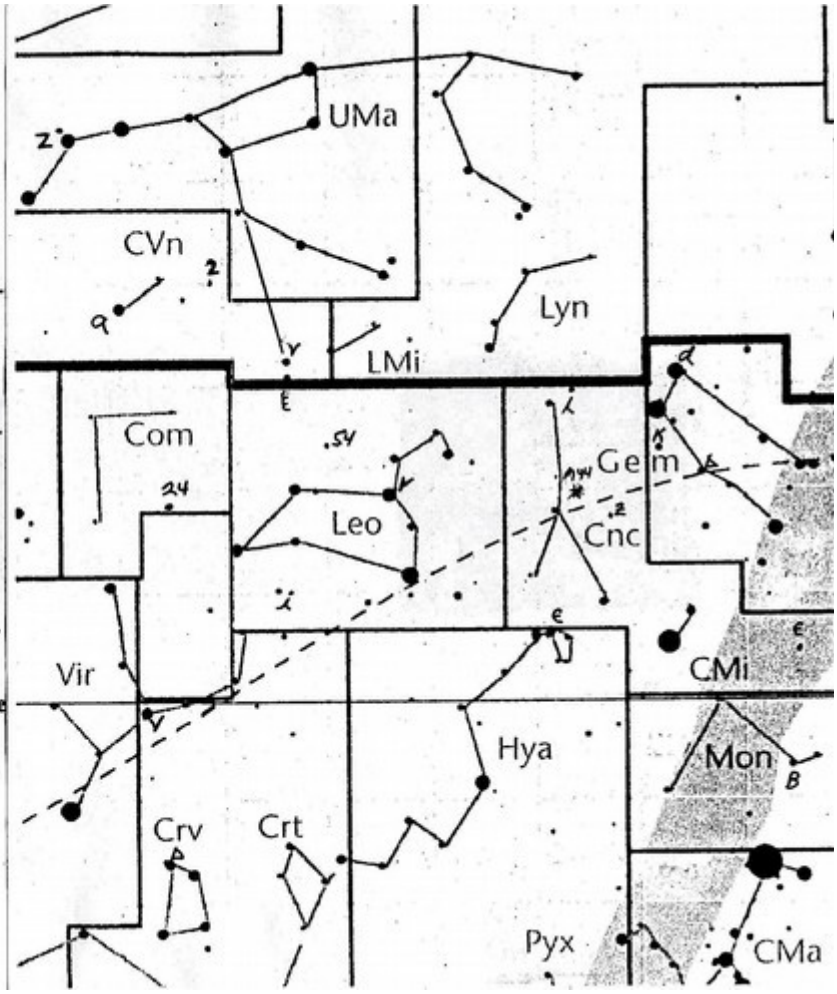
Print and use the Deep-Sky Interest Group - Observation Form to record your observations.

Deep space object charts courtesy of Len Jezior

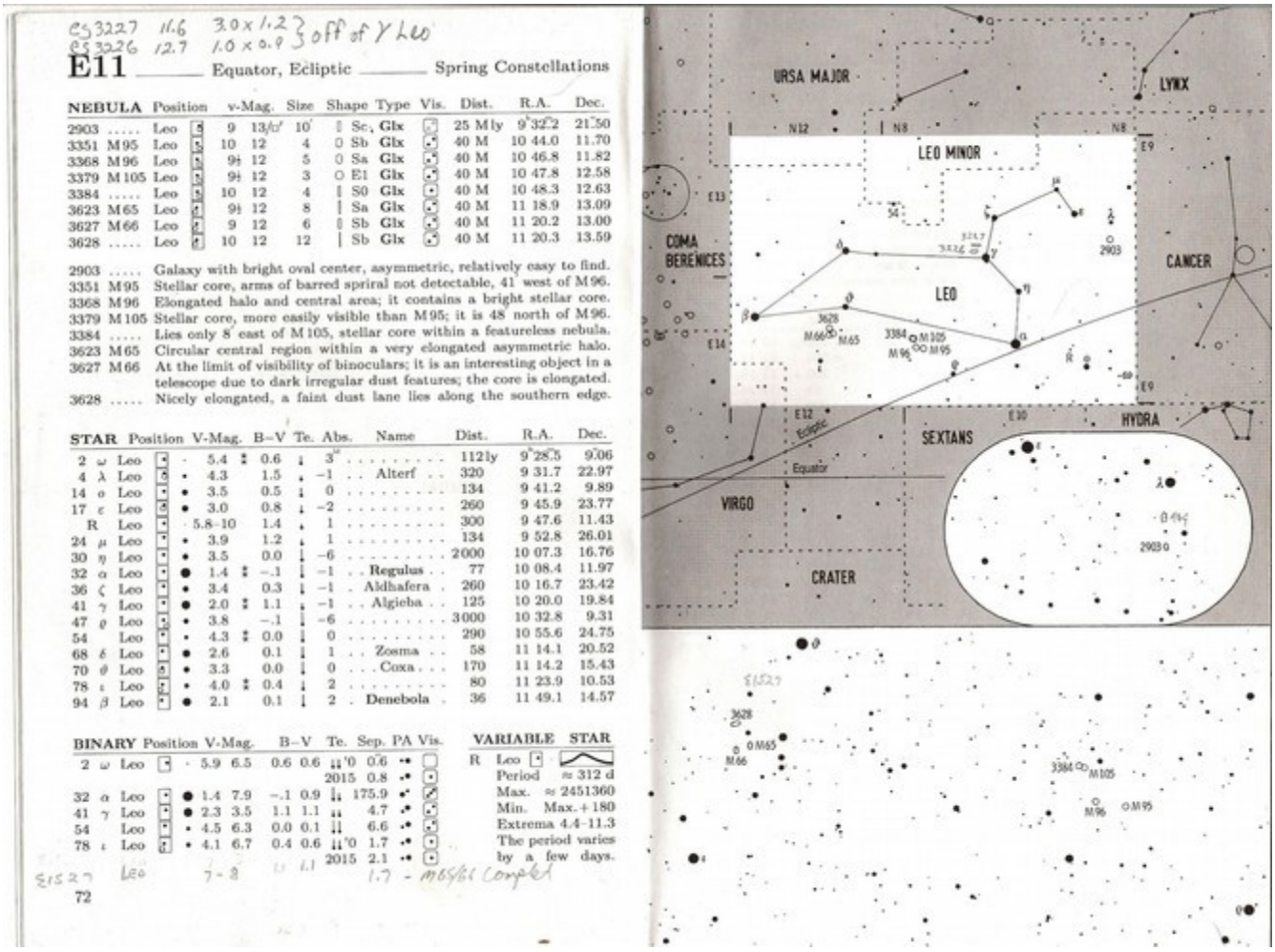
The May 4th occultation of Aldebaran was really cool! This is the brightest star that can be occulted by the Moon, and it was clear. This photo was shot about 1 minute before the occultation. I viewed that actual "blink out" using my IS binocs. 500mm lens at ISO400, f/6.3, 1/60sec ~Dave Lengyel

SPRING BINARY STARS

ID	MAGs	SEP (")	COLORS (Spectrum)
α Gem (Castor)	1.9, 2.9	4.3	A, A white
δ Gem	3.5, 8.0	6.3	F, A
κ Gem	3.6, 9.4	7.1	G, A yellow
ε Mon	4.4, 6.6	12.3	A, F
β Mon	5.1, 5.4	3.0	B, B blue
	4.6	8.3	B
ε Hydra	3.4, 6.9	2.9	G, F yellow
ζ Cancer	5.6, 6.0	1.0	F, G
	6.1	6.2	G
ι Cancer	4.0, 6.5	30.5	G, A yellow
α Leo (Regulus)	1.5, 8.0	176.0	B, A blue
γ Leo	2.3, 3.5	4.4	K, G yellow
54 Leo	4.5, 6.3	6.6	A, A white
ι Leo	4.1, 6.7	1.7	F, G
ξ UMa	4.3, 4.8	1.7	G, G yellow
α CVn CorCaroli	2.9, 5.5	19.3	A, F
2 CVn	5.9, 9.0	11.5	M, F red
ζ UMa Mizar	2.3, 3.9	14.4	A, A
24 Coma	5.0, 6.6	20.3	K, A orange
γ Virgo	3.5, 3.5	0.8	F, F**
δ Corvus	3.0, 7.5	24.2	A, K



Thanks to John Reising for binary and constellation charts.



CS 3227 11.6 3.0 x 1.2 } off of γ Leo
CS 3226 12.7 1.0 x 0.9 }

E11 — Equator, Ecliptic — Spring Constellations

NEBULA	Position	v-Mag.	Size	Shape	Type	Vis.	Dist.	R.A.	Dec.
2903	Leo	9	13′		Sc, Glx		25 M ly	9 32.2	21.50
3351 M95	Leo	10	12	4	Sb Glx		40 M	10 44.0	11.70
3368 M96	Leo	9½	12	5	Sa Glx		40 M	10 46.8	11.82
3379 M105	Leo	9½	12	3	E1 Glx		40 M	10 47.8	12.58
3384	Leo	10	12	4	S0 Glx		40 M	10 48.3	12.63
3623 M65	Leo	9½	12	8	Sa Glx		40 M	11 18.9	13.09
3627 M66	Leo	9	12	6	Sb Glx		40 M	11 20.2	13.00
3628	Leo	10	12	12	Sb Glx		40 M	11 20.3	13.59

2903 ..... Galaxy with bright oval center, asymmetric, relatively easy to find.
3351 M95 Stellar core, arms of barred spiral not detectable, 41′ west of M96.
3368 M96 Elongated halo and central area; it contains a bright stellar core.
3379 M105 Stellar core, more easily visible than M95; it is 48′ north of M96.
3384 ..... Lies only 8′ east of M105, stellar core within a featureless nebula.
3623 M65 Circular central region within a very elongated asymmetric halo.
3627 M66 At the limit of visibility of binoculars; it is an interesting object in a telescope due to dark irregular dust features; the core is elongated.
3628 ..... Nicely elongated, a faint dust lane lies along the southern edge.

STAR	Position	V-Mag.	B–V	Te.	Abs.	Name	Dist.	R.A.	Dec.
2 ω	Leo	5.4	0.6		3		112 ly	9 28.5	9.06
4 λ	Leo	4.3	1.5		−1	Alterf	320	9 31.7	22.97
14 o	Leo	3.5	0.5		0		134	9 41.2	9.89
17 ε	Leo	3.0	0.8		−2		260	9 45.9	23.77
R	Leo	5.8–10	1.4		1		300	9 47.6	11.43
24 μ	Leo	3.9	1.2		1		134	9 52.8	26.01
30 η	Leo	3.5	0.0		−6		2000	10 07.3	16.76
32 α	Leo	1.4	−.1		−1	Regulus	77	10 08.4	11.97
36 ζ	Leo	3.4	0.3		−1	Aldhafera	260	10 16.7	23.42
41 γ	Leo	2.0	1.1		−1	Algieba	125	10 20.0	19.84
47 ρ	Leo	3.8	−.1		−6		3000	10 32.8	9.31
54	Leo	4.3	0.0		0		290	10 55.6	24.75
68 δ	Leo	2.6	0.1		1	Zosma	58	11 14.1	20.52
70 θ	Leo	3.3	0.0		0	Coxa	170	11 14.2	15.43
78 ι	Leo	4.0	0.4		2		80	11 23.9	10.53
94 β	Leo	2.1	0.1		2	Denebola	36	11 49.1	14.57

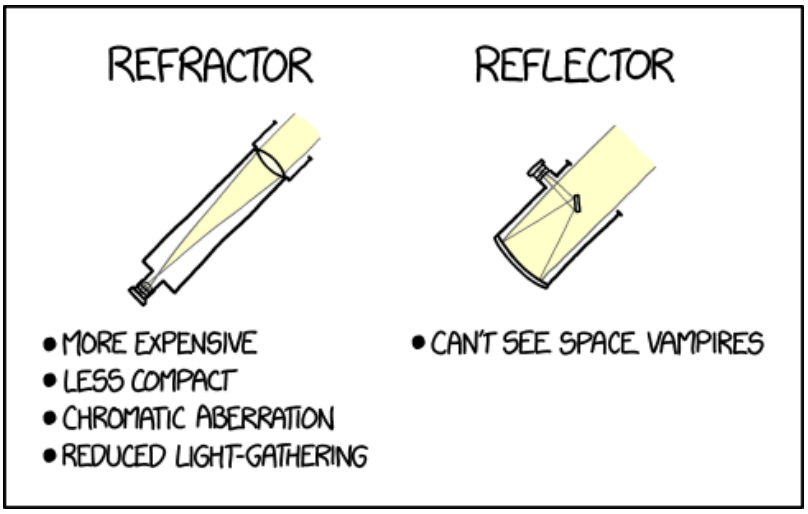
BINARY	Position	V-Mag.		B–V		Te.	Sep.	PA	Vis.
2 ω	Leo	5.9	6.5	0.6	0.6		0.6		
						2015	0.8		
32 α	Leo	1.4	7.9	−.1	0.9		175.9		
41 γ	Leo	2.3	3.5	1.1	1.1		4.7		
54	Leo	4.5	6.3	0.0	0.1		6.6		
78 ι	Leo	4.1	6.7	0.4	0.6		1.7		
						2015	2.1		

VARIABLE STAR
R Leo
Period ≈ 312 d
Max. ≈ 2451360
Min. Max. + 180
Extrema 4.4–11.3
The period varies by a few days.

E1527 Leo 7 - 8 1.7 - M65/66 Complex

72

Refractor vs. Reflector



Thanks to Lee Lumpkin for XKCD link https://xkcd.com/1791/

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