



Lorain County, Ohio

February 2019

Website: [blackriverastro.org](http://blackriverastro.org)

Newsletter submissions: [Editor](#)

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--Wednesday, February 6, 7 p.m.: Astronomy video by author Timothy Ferris, Carlisle Visitors Center (NOTE: Please check the blog on the club website to make sure the meeting is not canceled due to any extreme winter weather.)

--Friday, February 8, 8-10 p.m.: Public Observing, Nielsen Observatory (cloud backup Saturday, February 9)

--Thursday, February 14, 7 p.m.: Board meeting, Blue Sky Restaurant, Amherst, OH \* \* \*

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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.

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

Views expressed in articles are those of the authors and do not necessarily reflect the views of the membership or directors of the Black River Astronomical Society.

## Weather-related Cancellations

Before planning to drive to a regular meeting or to a club observing session in this fun stretch of northern Ohio winter and post-winter, please check the club website [blog](#) before you leave to make sure that the meeting or session has not been canceled due to hazardous driving conditions.

Observing sessions may be canceled due to either hazardous driving conditions or to poor sky conditions, so please--save yourself an unnecessary trip or unnecessary risk to life and limb, and check that [blog](#) first. Cancellations are posted several hours prior to the scheduled event.

## Board Summary    January 17, 2019

The January meeting of the BRAS Board of Directors was called to order at 7:05 p.m. with 10 Directors present. Secretary Bill Ruth read the minutes which were approved as was Dan Walker's Treasurer's Report. Committee reports followed with the *Guidescope* editor Bill Ruth reporting that all was well and that he had been receiving some submissions which are always appreciated! The Website committee reported that all was well, and the Instrumentation committee had no report since no one had been to the observatory in the last month. Tim Kreja reminded the Board that the light fixture on the west wall needs to have the bulb changed. However, the metal cage that covers the bulb seems to be frozen in place as we were unable to remove the screws that hold it. We will report this to the MetroParks for attention. The OTAA and MetroParks Liaison had no report.

Programming is as follows:

February	Jeff Walsh	Video- -Timothy Ferris
March	Dave Lengyel	Trip to Pahrump
April	Tim Kreja	Colonization of Mars
May	OPEN	
June	Denny Bodzash	Astronomical Automobiles
July	OPEN	
August	OPEN	
September	OPEN	
October	OPEN	
November	OPEN	
December	Holiday Pot Luck at Amherst Beaver Creek Reservation	

As is obvious from the above, we have quite a few open dates. Members are encouraged to consider preparing a talk on any topic of astronomical interest. We need a mix of topics for both novice and experienced members. Please contact the President ([BRASPres@gmail.com](mailto:BRASPres@gmail.com)) or any Board member if interested. Sometime during the summer we will be having a program exchange with our friends at MVAS, probably in July or August.

Old Business came next with the first item of discussion being any feedback received from members about changing the length or day (to a Saturday) of the annual holiday party. So far, no one has offered any opinions, although we are going to discuss it again at the next General Meeting. The second item was a followup on doing a member survey to gauge the interests of our members. We had been considering some kind of online or email survey, but the return rate on these is usually poor according to reports. Tim Kreja suggested that we print a survey and distribute it at a General Meeting and give folks time to fill it out if they wish. The surveys could be available at several meetings in a row to give people who can't always attend the opportunity to participate. This seems like a logical course of action and Schauer will work on survey questions and will present suggestions at the next Board Meeting for Board feedback.

Next came New Business, with the first item being a discussion of multiple outreach requests we have received. Several libraries, schools, and organizations have requested programs from us, many of them in March. We had so many that we were forced to turn several down as we simply couldn't schedule them. We will be participating in the Avon Lake "Dark Skies, Bright Kids" program on Friday February 15th. We are also in communication with the Rocky River Public Library, the Lorain Public Library and the New London Library, the latter being interested in an observing session at the New London Reservoir sometime in June or July. We will be getting additional information about these events, soon.

The next item of New Business was a discussion of the upcoming Transit of Mercury. This is an event when the planet Mercury will cross the face of the sun as seen from the Earth. It will occur on November 11, 2019 and will not happen again until November of 2032. Since November can be a very cloudy month, the discussion centered around whether we wanted to consider traveling to a less cloudy location. Schauer looked at 10 cities around the East Coast including Miami and Dallas, and discovered that Louisville Kentucky had a higher percentage of clear or mostly clear days than any city he investigated and is only about a five hour drive from us. The times are as follows:

Transit starts 7:36 a.m.

Mid transit 10:20 a.m.

Transit ends 1:02 p.m.

At the beginning of the transit, the Sun would only be at 3 degrees altitude so being somewhere with a good horizon would be welcome. However, by mid transit, the Sun will be at 27 degrees altitude. Louisville has several public parks right on the Ohio River which might offer good views. We will discuss this with members at the next General Meeting, to see if there is interest in doing an overnight trip to Louisville. Because it starts so early in the morning, a day trip seems inconvenient. We could plan the trip, make hotel reservations, and then watch the weather forecasts the week of the event. If it looks like it might be clear at home, we could simply cancel our hotel reservations and not travel. Members are encouraged to consider if they would be interested in car pooling for this transit.

The final item of New Business was the always happy task of voting in a new member, Jim Kantola. This was done unanimously, and we welcome Jim to the club!

Dates were set, and the meeting was adjourned at 8:18 p.m.

~Steve Schauer

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Here are a couple of photos from the total lunar eclipse of January 20/21 taken from my driveway in the suburbs of Wellington, Ohio.

It was amazingly clear during totality, considering the weather reports were so pessimistic all day long. I wanted to get some dimmer objects near the Moon, something that can only be done during an eclipse.

I went in and out of the house a lot during the event, since it was very cold.

Pentax K3 II using Astrotracer on a stationary and frozen tripod.

~Dave Lengyel





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## **Could Artificial Meteor Showers be Coming to a Sky Near You?**

Lena Okajima left her job with a financial advisory company in 2008 at the height of the global financial meltdown. While her own finances were then very much in question, Okajima had ambitions that were sky high. Now, 11 years after her gamble, Okajima finds herself the CEO of her own company, Astro Live Experiences (ALE). The company's plan for profit: creating artificial meteor showers for deep-pocketed clients.

For Okajima, her fascination with meteor showers began long before her drastic change of course in careers. In 2001, she witnessed the Leonid outburst. Hooked, Okajima longed for the opportunity to witness such an event again. It was then that she conceived the idea of artificially creating meteor showers.

Meteor showers are caused by tiny particles of space debris hitting Earth's atmosphere. When they hit, the transition from the vacuum of space to the dense atmosphere of Earth causes friction,

which then causes heat and, as a result, the tiny pieces of space dust light up. Many of the meteors that are seen in showers are the size of sand grains and burn up in the atmosphere. It is estimated that 60 tons of meteor dust rains to Earth every day. Only the largest of fragments survive the fall to Earth's surface, at which point they are then called meteorites.

Knowing the science behind the meteor showers that so fascinated her, Okajima realized that, at least in theory, creating a meteor shower would be as simple as launching a satellite into orbit and then releasing a load of fine particulates that would fall back to Earth, blazing fiery trails through the firmament as they went.

However, to direct a shower to a particular place is not easy.

To achieve that goal, ALE has developed a compressed gas powered gun that will shoot out tiny projectiles at a speed of 8km/second. As for what the projectiles are made of, ALE is mum on that point. However, the company does state that the pellets can be made of different materials to produce different colors and that they will probably be brighter than a natural meteor of the same size.

Is this a crazy idea or does it have potential? The world may not have long to wait as ALE hopes to have its first satellite in orbit by the end of March, 2019.

~Denny Bodzash

**E7** Equator, Ecliptic Winter Constellations

NEBULA	Position	v-Mag.	Size	Shape	Type	Vis.	Dist.	R.A.	Dec.
2129	Gem 5	7	10'b'	5'	o p OC	☉	6000ly	6°01.0	23°30
2168 M35	Gem 5	5	12	30	o r OC	☉	3000	6 08.9	24.33
2175	Ori 2	7	13	20	o p n OC	☉	7000	6 09.8	20.32
2261	Mon 2	9j	10	1.8	Re DN	☉	3000	6 39.2	8.73
2264	Mon 2	4	9	15	o p n OC	☉	1000	6 41.1	9.88
2392	Gem 5	9	8	0.8	o D PN	☉	2500	7 29.2	20.91

2129 ..... Recognizable as a cluster in a telescope, very sparse, inconspicuous.  
 2168 M35 Near the limit of the unaided eye, bright glow with some stars in binoculars, nicely resolved in a telescope, impressive at low power.  
 2175 ..... Very inconspicuous; 10' north is the dim diffuse nebula NGC2174.  
 2261 ..... Hubble's Variable Nebula, variable within days, some detail visible in a telescope at high power; it almost looks like a comet.  
 2264 ..... Christmas Tree, elongated, one mag. 4.7 star, others mag. 8-10.  
 2392 ..... Eskimo Nebula, bright green disk, irregularly bright central region; the mag. 10.5 central star is clearly visible at high power.

STAR	Position	V-Mag.	B-V	Tu.	Abs.	Name	Dist.	R.A.	Dec.
7 $\gamma$	Gem 2	3.2-3.4	1.6	-2	-2	Tejat Prior	350ly	6°14.9	22°51
13 $\mu$	Gem 2	2.9	1.6	-1	-1	Tejat Posterior	230	6 23.0	22.51
18 $\nu$	Gem 2	4.1	-1	-2	-2	.....	450	6 29.0	20.21
24 $\gamma$	Gem 2	1.9	0.0	-1	-1	Alhena	105	6 37.7	16.40
15	Mon 2	4.6	-2	-3	-3	in NGC2264	1000	6 41.0	9.90
27 $\epsilon$	Gem 2	3.1	1.4	-4	-4	Mebuda	900	6 43.9	25.13
31 $\xi$	Gem 2	3.4	0.4	2	2	.....	57	6 45.3	12.90
34 $\theta$	Gem 2	3.6	0.1	1	0	.....	195	6 52.8	33.96
38	Gem 2	4.7	0.3	2	2	.....	90	6 54.6	13.18
43 $\zeta$	Gem 2	3.6-4.2	0.9	-4	-4	Mekbuda	1000.90	7 04.1	20.57
54 $\lambda$	Gem 2	3.6	0.1	1	1	.....	94	7 18.1	16.54
55 $\delta$	Gem 2	3.5	0.4	1	2	Wasat	59	7 20.1	21.98
60 $\iota$	Gem 2	3.8	1.0	1	1	.....	125	7 25.7	27.80
62 $\phi$	Gem 2	4.2	0.3	3	3	.....	60	7 29.1	31.78
66 $\alpha$	Gem 2	1.6	0.0	1	0	Castor	52	7 34.6	31.89
69 $\nu$	Gem 2	4.1	1.5	0	0	.....	240	7 35.9	26.90
77 $\kappa$	Gem 2	3.0	0.9	0	0	.....	145	7 44.4	24.40
78 $\beta$	Gem 2	1.1	1.0	1	1	Pollux	33.5	7 45.3	28.03

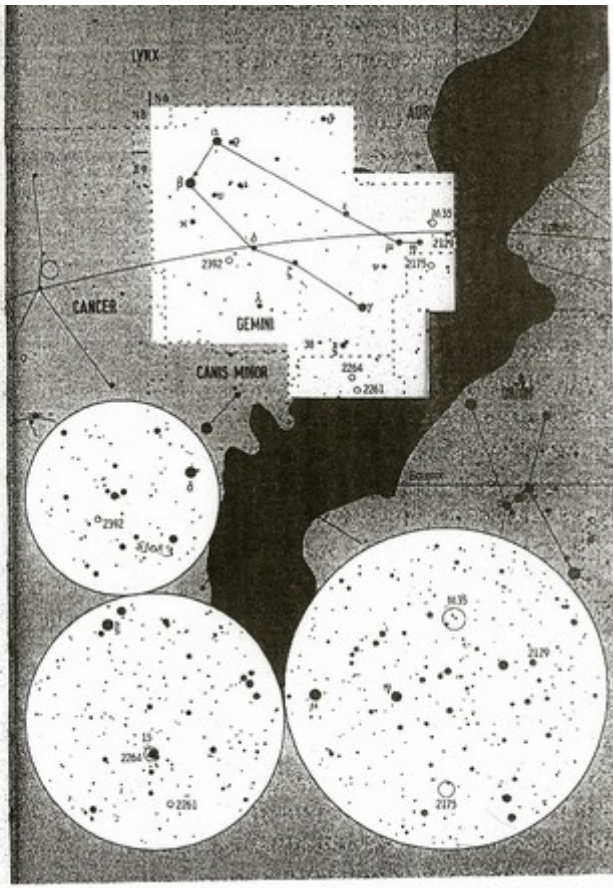
**BINARY** Position V-Mag. B-V Tu. Sep. PA Vis.

15	Mon 2	4.7	7.7	-2	0.0	11	2.9	☉
38	Gem 2	4.7	7.7	0.3	0.7	11	7.3	☉
43 $\zeta$	Gem 2	4	7.6	0.9	0.6	11	101	☉
66 $\alpha$	Gem 2	1.9	2.9	0.0	0.1	11	3.9	☉

**VARIABLE STAR**

7 $\gamma$	Gem 2	semireg.	Period	232.9 d
15	Mon 2	.....	Min.	= 2451230
.....	.....	.....	Extrema	3.2-3.9
43 $\zeta$	Gem 2	.....	Period	10.1508 d
.....	.....	.....	Max.	2451205.8

**Handwritten notes:**  
 K Gem 4.0, 10.0 7.0"  
 04h Gem 3.0, 10.0 9.6"  
 A Gem 3.5, 8.0 8.3"  
 E10f3 6.5, 7.5 6.4"



Thanks to John Reising for the Constellation of the Month.

## Deep-Sky Objects for February

RA	Dec	Number	Alt.	Size	Mag	Const.	Type of Object
<b>Objects for Binoculars</b>							
05h35.1	-04°44'	NGC 1973-5-7		20' x 10'		Orion	E/R Nebula, just N. of M42
05h35.2	-04°26'	NGC 1981	Cr73	25.0'	m4.6v	Orion	Open Cluster, 1 degree N of M42
05h35.4	-05°27'	NGC 1976	M42	65' x 60'	m2.9v	Orion	"Great Orion Nebula"
05h35.6	-05°16'	NGC 1982	M43	20' x 15'	m6.8v	Orion	Nebula attached NNE edge of M42
05h36	-01°	Collinder 70		150'	m0.4v	Orion	Open Cluster (Belt Stars + 100*)
<b>Objects for Small Telescopes (2-6 inch)</b>							
06h07.5	+24°06'	NGC 2158	Cr81	5'	m8.6v	Gemini	Open Cluster, just south of M35
06h08.9	+24°20'	NGC 2168	M35	28'	m5.1v	Gemini	Open Cluster, 200 stars
06h47.0	-20°44'	NGC 2287	M41	38'	m4.5v	Canis Major	Open Cluster, 80 stars
07h18.8	-24°57'	NGC 2362	H177	8'	m4.1v	Canis Major	Open Cluster, 60 stars
07h29.2	+20°55'	NGC 2393	H454	>15'	m9.2v	Gemini	Planetary Nebula "Eskimo Nebula"
<b>Objects for Medium-size Telescopes (8-14-inch)</b>							
06h01.0	+23°18'	NGC 2129	Cr77	7'	m6.7v	Gemini	Open Cluster, 40 stars
06h43.2	+26°58'	NGC 2266	H216	6'	m9.5p	Gemini	Open Cluster, 50 stars
07h16.9	+13°47'	NGC 2355	H66	9'	m9.7p	Gemini	Open Cluster, 40 stars
07h25.6	+29°29'	NGC 2371-2	H3162	55"	m11.3v	Gemini	Planetary Nebula
07h38.5	+21°34'	NGC 2420	H16	10'	m8.3v	Gemini	Open Cluster, 100 stars
<b>Objects for Larger Telescopes (16-inch &amp; larger) Challenge Objects</b>							
06h16.9	+22°47'	IC 443		50' x 40'	&nbsp;	Gemini	Supernova remnant / E. Neb.
06h25.9	+17°47'	J900	PK194+2.1	>8"	m11.7v	Gemini	Planetary Nebula
06h28.4	+33°50'	NGC 2385		0.7' x 0.3'	m14.2v	Gemini	Galaxy, type ? (with next 2 objects)
06h29.1	+33°51'	NGC 2388		0.9' x 0.6'	m13.7v	Gemini	Galaxy, type S?
06h29.1	+33°51'	NGC 2389		1.8' x 1.4'	m12.9v	Gemini	Galaxy, type SAB(rs)c

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

Thanks to Len Jezior for deep-sky objects charts.

## Skygazing

The pursuit of amateur astronomy has its challenges: weather; social, educational, and vocational commitments; technical difficulties with optics and tracking; technical difficulties with health and eyesight; family and worldly problems; competing interests; and digital, analog, conceptual, and biological distractions of every sort.

Another challenge is that the sky appears to be increasingly diminished by light pollution and air pollution, and cluttered with aircraft, artificial satellites and, one day perhaps, with artificial moons and artificial meteor showers.

With the apparent decline of the sky I've gone through the five stages of grief--denial, anger, bargaining, depression, acceptance--and have, at long last, arrived at acceptance of the sky as it now is. Here are some personal reflections and refractions picked up along the way.

The sky itself is the same old sky. It's indestructible. It's never going away. It can handle whatever appears in it.

It always has enough room for everything.

Phenomena within the sky always change, but the sky itself never changes.

The sky itself is always spacious, always clear, always pristine, always natural, always... the sky.

We're not under the sky, we're *in* the sky. This lovely lively planet is in the sky.

The sky extends everywhere and contains everything.

Everything comes from and returns to the sky. Flashes and forms of energy appear, change, disappear and reappear within it.

Stars, planets (especially this one, teeming with life-forms), galaxies, all the forms that nature takes within the sky are beautiful to behold. Yet the sky itself remains invisible, transparent, filled with everything while having no form or color of its own.

We can't always stargaze, but we can always skygaze, day and night, in the city and in the country, cloudy and clear.

The natural mind—pure awareness—is skylike, the sky of mind. The spacious open sky brings out the clear spacious openness of the natural sky of mind.

Everything rises and sets, appears and disappears, in the sky of mind.

We can be content to gaze into the sky and the ever-changing everything within it with our clear, perfect, natural sky of mind.

We can be content to gaze into the clear sky of mind with the clear sky of mind.

~Bill Ruth





Venus, Moon, and Jupiter, morning of January 31, 2019

~Dave Lengyel