

Newsletter of
The Black River Astronomical Society

Guidescope

Lorain County, Ohio

May 2019

Website: blackriverastro.org

Newsletter submissions: [Editor](#)

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--Wednesday, May 1, 7 p.m.: Regular meeting, Carlisle Visitors Center. The Colonization of Mars, by Tim Kreja

-Thursday, May 9, 7 p.m.: Board meeting, Blue Sky Restaurant, Amherst

--Friday, May 10, 10p-mid.: Public observing, Nielsen Observatory (cloud backup date Saturday, May 11, 10p-mid.)

-Sunday, May 18, 10 a.m. - 3 p.m.: Solar observing at LCMP Adventure Fest, Mill Hollow Vermilion River Reservation, 51211 North Ridge Rd., Vermilion. All members are encouraged to join us handing out club literature and viewing the Sun.

--Friday, May 24, 10-mid.: Public observing Nielsen Observatory (cloud backup date Saturday, May 25, 10p-mid.)

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

~Bill Ruth

Board Summary

April 11, 2019

The April Board of Directors meeting was called to order with nine Directors present. The first task of the Board was to vote to appoint Dianna Richardson to finish out the term of Greg Honis who recently passed away. It was moved by Dan Walker, and seconded by Mickey Hasbrook, and Dianna was unanimously voted in. Welcome to the Board, Dianna!

Next, the minutes of the March meeting were distributed and read. They were unanimously passed after a motion by Jeff Walsh and a second from John Reising. The Treasurer, Dan Walker, also read the Treasurer's Report.

Next came committee reports with Bill Ruth, the *Guidescope* editor, reporting that the newsletter is going well and he is receiving submissions from members. The Website Committee had nothing to report as the website is operating well. The Instrumentation chairman, John Reising, reported that he had not been at the observatory recently, but that all was well the last time he checked in. Those of us who were at the last Public Observing session commented that we did not open the roof over the orange tube C-14 due to the damage to the inner OSB layer of the roof. The Metro Parks is aware of the issue and will do repairs once the weather finally breaks. We used the black C-14 instead. Otherwise, the observatory and telescopes are fine. The OTAA Chairman had nothing to report, and the Metro Parks Liaison said our excellent relations with the Parks were status quo.

Programming is as follows:

May	Tim Kreja	The Colonization of Mars
June	Denny Bodzash	Astronomical Automobiles

July	OPEN
August	Jodi McCullough Astrophotography
September	Member Forum--Results of the member survey
October	The Annual Meeting of the Members/Elections/ short video
November	tentative Visit to the Oberlin College Planetarium
December	Annual Holiday Pot Luck at the Metro Parks Beaver Creek Reservation in Amherst

Old Business followed with the first item being a discussion of the member survey. The survey is finished and was given to Tim Kreja who has kindly agreed to photocopy it for us. We will distribute the surveys to every paid-up member at the beginning of the May General Meeting, and people will be given time to complete it. Surveys will also be given out at the June and July meetings to people who were not in attendance in May. Then, in October, a “State of the Club” program will be given based on the information gained from the surveys. If time permits in October, we may ask members to briefly share how they got started in astronomy.

The second piece of Old Business was concerning a program exchange we are planning with the Mahoning Valley club. Their President, Jodi McCullough, will travel here in August to do a program on astrophotography, and we will travel there to present a program either on binocular viewing or the colonization of Mars. Schauer will contact MVAS and decide with them when they would like us.

The final item of Old Business was a reminder by Schauer that Mercury will transit the face of the Sun on Monday, November 11, 2019. The transit will start at 7:36 a.m. with the Sun at only 3 degrees altitude. Mid-transit will be at 10:20 a.m. with the Sun's altitude at 27 degrees and it will finish at 1:02 p.m. with the Sun at 33 degrees. Although the transit can be seen from Ohio, November is a usually cloudy month, so some discussion occurred about a trip to Louisville, Kentucky to view the event there as they average 65% of days (on Nov.11th) that are sunny, mostly sunny or partly sunny, while Ohio averages 48% clear. The suggestion is to get hotel reservations in Louisville and watch the weather. If it will be clear at home, we can cancel our reservations and view here. If it is cloudy here but clear in Kentucky we have a hotel waiting. If it is cloudy in both places, again, we cancel our reservations and wait until next time.

Under New Business, the President reported that Mahoning Valley recently had a mid-'70s Celestron C-14 telescope donated to them. It came with a Daystar H-alpha filter, wedge and tripod, and a white light solar filter. It has been quickly examined and there are some issues with the R.A. drive, but motors on both axes work. MVAS just purchased a Losmandy German equatorial mount for their 12” telescope and may use the C-14 on that mount as well. Schauer contacted them and inquired if they were going to use the fork arms and drive base/wedge or not. If not, we would love to have those items and perhaps we could buy them or do some kind of exchange. They still need to examine their “new” scope in detail, which won't happen for a month or so, but if we could obtain the forks/drive base and wedge, we could mount our black C-14 on the forks and not use the Losmandy mount that so many of us dislike using.

Dates were set, and the meeting was adjourned at 8:25 p.m.

~Steve Schauer

Deep-Sky Objects for May

Objects for Binoculars							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
12 ^h 30.0 ^m	+51° 32'	7 CVn	6.2, 10.4, 9.0	AB 109°, AC 229°	AC 172°, AB 327°	CVn	Triple Star
13 ^h 15.8 ^m	+42° 02'	M63	8.6v	13.5'x8.3'		CVn	"Sunflower" Galaxy
13 ^h 23.9 ^m	+54° 54'	79 & 80 UMa	2.3, 4.0	708.7"	71°	Uma	Double Star, "Mizar & Alcor"
13 ^h 29.9 ^m	+47° 12'	M51	8.4v	8.2'x6.9'		CVn	"Whirlpool Galaxy"
13 ^h 42.2 ^m	+28° 23'	M3	5.9v	16.2'		CVn	Globular Cluster
Objects for Small Telescopes (2-6 inch)							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
12 ^h 17.5 ^m	+37° 49'	NGC 4244	10.4v	17.0'x2.2'		CVn	Galaxy
12 ^h 19.0 ^m	+47° 18'	M106	8.4v	20.0'x8.4'		CVn	Galaxy
12 ^h 56.0 ^m	+38° 19'	12-Alp a	2.9, 5.5	19.4"	229°	CVn	Double Star, "Cor Caroli"
13 ^h 12.9 ^m	+18° 10'	M53	7.5v	12.6'		Com	Globular Cluster
13 ^h 23.9 ^m	+54° 56'	79 Zeta	2.4, 3.9	14.4	150°	Uma	Double Star
Objects for Medium Telescopes (8-14 inch)							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
10 ^h 19.9 ^m	+45° 33'	NGC 3198	10.3v	9.2'x3.5'		UMa	Galaxy
11 ^h 11.5 ^m	+55° 40'	NGC 3556	10.0v	8.1'x2.1'		UMa	Galaxy
11 ^h 57.6 ^m	+53° 23'	M109	9.8v	7.6'x4.3'		UMa	Galaxy
12 ^h 13.8 ^m	+14° 54'	M98	10.1v	9.1'x2.1'		Com	Galaxy
12 ^h 22.9 ^m	+15° 47'	M100	9.3v	6.2'x5.3'		Com	Galaxy
12 ^h 25.1 ^m	+12° 53'	M84	9.1v	5.1'x4.1'		Vir	"Galaxy, with N4388, N4387"
12 ^h 26.2 ^m	+12° 57'	M86	8.9v	12.0'x9.3'		Vir	"Galaxy, with N4388, N4387"
Objects for Larger Telescopes (16-inch & larger) Challenge Objects							
RA	Dec	Number	Mag(s)	Size/Sep.	PA	Const.	Type of Object
10 ^h 18.3 ^m	+41° 25'	NGC 3184	9.8v	7.8'x7.2'		UMa	Galaxy
11 ^h 14.8 ^m	+55° 01'	M97	9.9v	194"		Uma	Planetary Nebula "Owl"
11 ^h 18.8 ^m	+14° 25'	M99	9.9v	4.6'x4.3'		Com	Galaxy
12 ^h 36.3 ^m	+25° 59'	NGC 4565	9.6v	14.0'x1.8'		Com	Galaxy
12 ^h 36.6 ^m	+11° 14'	NGC4567-68	10.8, 11.3	4.7'x2.2'		Vir	Galaxies, "Siamee Twins"
12 ^h 40.0 ^m	-11° 37'	M104	8.0v	7.1'x4.4'		Vir	"Sombrero Galaxy"
12 ^h 56.7 ^m	+21° 41'	M64	8.5v	9.2'x4.6'		Com	"Black Eye Galaxy"
14 ^h 03.2 ^m	+54° 21'	M101	7.9v	26.0'x26.0'		UMa	Galaxy

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

May Deep Sky Object chart courtesy of Len Jezior.

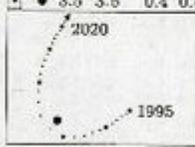
E12 Equator, Ecliptic Spring Constellations

NEBULA	Position	v-Mag.	Size	Shape	Type	Vis.	Dist.	R.A.	Dec.
4361	Crv	10 ^h 11 ^m	1.2	○	PN	☉	4000ly	12 ^h 24 ^m 5	-18.79
4590 M68	Hya	8 13 10	○	X	GC	☾	30000	12 39.5	-26.74
4594 M104	Vir	8 ^h 12 ^m	8		Sa	Glx	50 M	12 40.0	-11.62
4697	Vir	9 ^h 11 ^m	2.5	○	E6	Glx	60 M	12 48.6	-5.80

- ✓4361 Faint planetary, requires high power; the central star is only mag. 13.
- ✓4590 M68 Resolved only in a telescope, but then even in the very center.
- ✓4594 M104 **Sombrero Galaxy**, very elongated, spindle shape barely visible in binoculars, impressive in a telescope, dust lane nearly right through the center, small double core; a chain of stars lies 25' to the west.
- 4697 Small, elongated, contains a stellar nucleus, otherwise featureless.

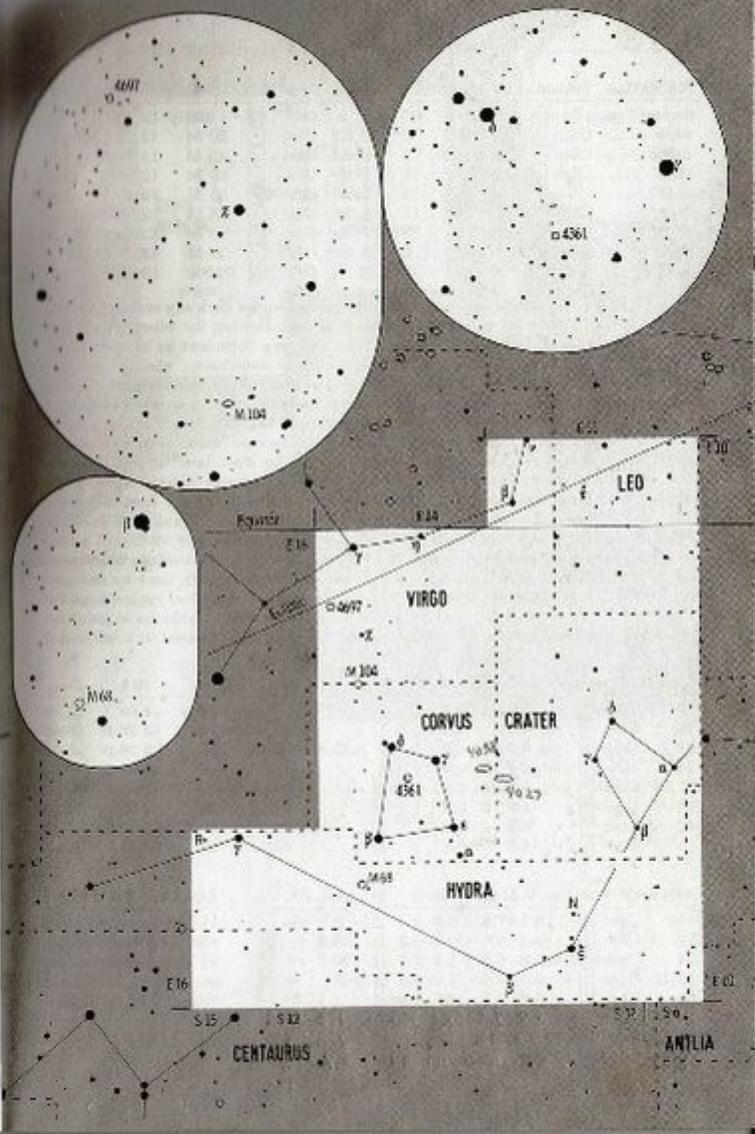
STAR	Position	V-Mag.	B-V	Tc.	Abs.	Name	Dist.	R.A.	Dec.
7 α	Crv	4.1	1.1	0	Alkes	180ly	10 ^h 59.8	-18 ^o 30'	
11 β	Crv	4.5	0.0	0		260	11 11.7	-22.83	
12 δ	Crv	3.6	1.1	0		200	11 19.3	-14.78	
15 γ	Crv	4.1	0.2	2		84	11 24.9	-17.68	
84 γ	Leo	4.9	0.9	2		600,1000	11 27.9	2.85	
N	Hya	4.9	0.5	3		87	11 32.3	-29.26	
ε	Hya	3.5	0.9	1		130	11 33.0	-31.86	
3 β	Vir	4.0	1.5	-1		300	11 45.9	6.53	
5 β	Vir	3.6	0.5	3	Zawijava	35.5	11 50.7	1.76	
δ	Hya	4.3	-1	-1		360	11 52.9	-33.91	
1 α	Crv	4.0	0.3	3	Aichiba	49	12 08.4	-24.73	
2 ε	Crv	3.0	1.3	-2		300	12 10.1	-22.62	
4 γ	Crv	2.6	-1	-1	Chenab	165	12 15.8	17.54	
15 η	Vir	3.9	0.0	-1	Zaniah	260	12 19.9	-0.67	
7 δ	Crv	2.9	0.0	1	Algorab	88	12 29.9	-16.52	
9 β	Crv	2.7	0.9	-1		140	12 34.4	-23.40	
26 χ	Vir	4.6	1.2	0		310	12 39.2	-8.00	
29 γ	Vir	2.7	0.4	2	Porrina	39	12 41.7	-1.45	
36 γ	Hya	3.0	0.9	0		132	13 18.9	-23.17	
R	Hya	4.9	0.0	1.6	-2		800	13 29.7	-23.28

BINARY	Position	V-Mag.	B-V	Tc.	Sep.	PA	Vis.
84 γ	Leo	5.0	7.5	1.0	0.4	41 89°	☾
N	Hya	5.6	5.8	0.5	0.5	41 9.5	☾
29 γ	Vir	3.5	3.5	0.4	0.4	11 ^h 10 ^m 1.6	☾



74 D CORV 3-8 1/2 A0 B2 242 2M
 V CRA 4-9 A7 A1 S.2 96

VARIABLE STAR	Period	Extrema	Notes
R Hys	387 d	3.5-10.9	The period has been decreasing; it was close to 500 days during the early 1700s.



Constellation of the Month courtesy of John Reising.

President Trump Declares Solar Storm/EMP Threat National Security Priority

On March 26, President Trump signed an executive order directing the federal government to put the threat posed by electromagnetic pulses (EMPs) at the top of the national security priority list and fast-track implementing recommendations suggested by the nearly 20-year old Congressional EMP Commission.

For the United States, this is a move over 50 years past due.

EMPs were first observed in 1962 during a nuclear test called Starfish Prime. In the test, a 1.4 megaton H-bomb (over 100 times as powerful as the Hiroshima A-bomb) was detonated roughly 250 miles up in the atmosphere. The goal of the test was to see how a high-altitude Soviet nuclear detonation would interfere with U.S. ICBMs. At the time of the test, it was known that a nuclear explosion would unleash, in addition to massive amounts of energy, gamma rays, X-rays, and supercharged subatomic particles, all of which could play havoc with electronics, including our missiles.

While the EMP was predicted, its strength was a surprise. There were artificial aurora, widespread radio blackouts, and electrical surges on planes (thankfully planes' controls at the time were purely mechanical). Hundreds of miles away in Honolulu, streetlights exploded, telephone service was disrupted, and there were blackouts. A long-lasting effect was an artificial band of radiation around the Earth that persisted for months. Several satellites, including the pioneering *Telstar 1*, were destroyed. While the Starfish Prime EMP was artificial, the same thing could happen if the Sun were to explode in a massive Earth-facing flare, which has happened before.

In 1859, there was a solar storm named the Carrington Event after the astronomer who witnessed the outburst. The solar storm was so strong that telegraph lines, the only electronics of the time, started smoking and/or caught fire. Receivers shocked operators and even emitted sparks. Receivers not destroyed were able to, for a brief time, transmit without being connected to their batteries. Aurora were sighted as far south as Hawaii, Central America, and sub-Saharan Africa.

In the present, with modern civilization itself almost completely reliant upon electronics, a collapse of the national power grid could lead to the collapse of civilization itself as virtually every device relying on electricity could be rendered inoperable. In 2008, a Congressional EMP Commission report stated that up to 90% of the U.S. population could be dead within a year of a national power grid collapse, due in large part to starvation, exposure, disease, and radioactive fallout.

The best aspect of this executive order is that it places the White House, not Congress or bureaucrats, at the vanguard of defense against solar storms/EMPs. Why is this good? The dangers of EMPs have been known for decades yet Congress and the Departments of Energy and Homeland Security have done nothing of any material value thus far. Hopefully, executive action will finally see to it that this long overlooked threat to not only national security but civilization itself will be addressed.

This is something that all Americans, regardless of political beliefs, should be able to agree on.

~Denny Bodzash



An Unusually Unusual Comet

~Dave Lengyel

The Colonization of Earth

As we prepare to colonize the Moon and Mars, I'd like to consider how we Earthlings colonize Earth.

In geological deep time, we humans just landed on this planet. And this is one amazing outpost in the universe.

We're a very successful species, the apex of apex predators, the top of the food chain. We inhabit every habitable place, and we can make uninhabitable places habitable.

Our mastery of technology is impressive, and getting better all the time. Life has never been so good, and so easy, at least for those of us living in the developed nations.

Whenever the power goes out we assume it'll just be for a short while, and usually that's the case.

Food always mysteriously grows at the supermarket and is harvested with a debit card.

The problem is that we prosperous First Worlders require more than one world's-worth of resources to sustain this good life to which we have become accustomed--about four or five Earths by some calculations, if everyone lived like us. Currently the total human population requires about 1.7 Earths to keep going the way it is.

Reading about life in Third World nations makes me wonder what it would be like living every day without electricity and indoor plumbing and the energy-intensive high-tech high life we take for granted. Maybe a Carrington-level CME would provide us that opportunity, or when it gets to be that time when the Earth just can't keep coming up with more than one of itself to meet the demands of its teeming high-maintenance humans and some kind of biospheric reset happens.

It's entirely possible that all Earth colonists could have a good-enough life, healthy and fulfilling, that Earth could support indefinitely.

It would be reassuring to know that a major CME would just be an easily-weathered hiccup to a more robust, agile, peaceful, cooperative, decentralized, and down-to-Earth planetary civilization.

Extraterrestrial colonization is hard, and we'll keep at it until we succeed; it will demonstrate how we can survive well in extremely inhospitable places if done properly. In the meantime it looks like we now need to learn to properly colonize the Earth—that will be hard enough.

~Bill Ruth