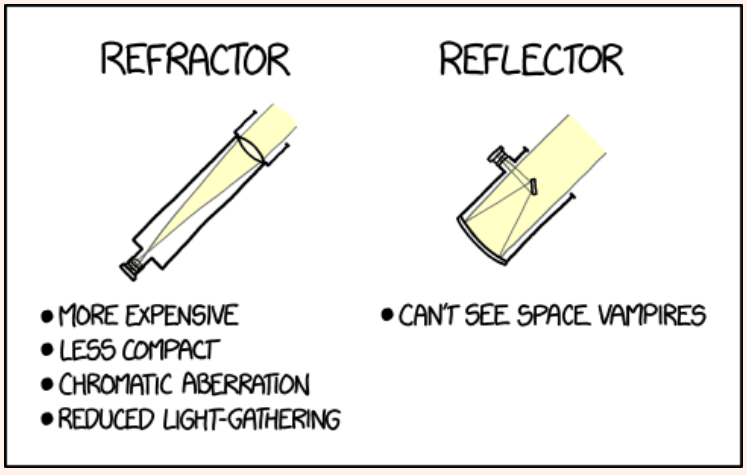
The Spectrum

March/April
Volume 19, Issue 2

Hi all,

April is a busy month with several busy weekends. The banquet, Astronomy Day, public night, and NEAF are just some of the highlights. There is a lot of material in this issue so take your time and browse at your leisure. Also be sure to check out the website!



https://xkcd.com/1791/

The Usual Schedule of BAA Events:

March 10: BAA meeting at Buffalo State 7:30pm
March 18/19: Maple Syrup Festival Weekend Obs open 9am to 3pm and public viewing Sat night – there will be a bring a dish to pass dinner between the festival and public viewing
March 24 or 25: Messier Marathon Party at the Obs weather permitting - stay tuned to the Egroups
April 1: Beaver Meadow Observatory – first public night of the 2017!
April 8/9: NEAF
April 22: BAA Annual Dinner Meeting – see article
April 29: Astronomy Day at the Buffalo Museum of Science
May 6: Public Night Beaver Meadow Observatory
May 12: BAA meeting at Buffalo State- 7:30pm
May 13: Wilson Star Search
June 3: Public Night Beaver Meadow Observatory
June 9: BAA meeting at Buffalo State- 7:30pm –Elections for members at large
June 10: Wilson Star Search
July 1: Public Night Beaver Meadow Observatory
July 22: BAA annual Star Party at Beaver Meadow Observatory
Aug 5 Public Night Beaver Meadow Observatory
Aug 19 Wilson Star Search
Aug 21: Wilson Star Search will be viewing the Total Solar Eclipse – If You know what's good for you, you really want to be on CENTER LINE at a clear location or ELSE!!!
Sept 2: Public Night Beaver Meadow Observatory
Sept 8: BAA meeting at Buffalo State 7:30pm
Sept 9: Wilson Star Search
Sept 22-24: Black Forest Star Party
Oct 7: Public Night Beaver Meadow Observatory
Oct 13: (our lucky) BAA meeting, Buffalo State – 7:30pm
Oct 14: Wilson Star Search
Nov 10: BAA meeting, Buffalo State – 7:30pm
Dec 8: BAA Holliday Party Buffalo State – 7:30pm

Mark your Calendar!

2017 BAA Dinner Banquet

Saturday, April 22 at 6:00pm

Join us for our most popular meeting of the year! By popular demand, we will return to

Rizotto Ristorante, 930 Maple Rd. in Williamsville and enjoy a sumptuous dinner planned by

the Chef and our banquet coordinators Mary and Pat Hays. Our featured speaker will be

Ron Voller, NYC based writer, illustrator and author of the recent book

The Muleskinner and the Stars

The story of **Milton La Salle Humason** *who transitioned from humble beginnings to become a leading figure at Mount Wilson Observatory, working alongside Edwin Hubble to help shape our understanding of our place in the universe.*

Please watch for the banquet invitation in your email inbox. Tickets are $32/person. Reservations can be made by credit card or PayPal from the BAA website or by sending a check and form via mail. Registration will open shortly. All reservations must be made by April 8th.

Questions can be directed to Mary and Pat Hays at haysgroup2@hotmail.com

Observatory Report

This winter continues to be uncooperative weather wise. The lake still has not frozen over and it has not been cold or snowy either. Comet 45P has not lived up to its predictions. Hopefully our luck with the cloud cover will change this summer and we have another dry one with little dew at the Observatory. The local planetariums are getting geared up for The Great American Eclipse. I will be promoting the Eclipse at Public Nights and public events at the Observatory. If you do NOT have plans to leave town for the Eclipse and want to man the Observatory, let me know, and I will get Beaver Meadow Observatory in the loop for people to go watch the Eclipse.

Rail Update: So far no complaints on the rail covers other than they are HEAVY. Will keep them in service till the end of March- Plan on removing them after the first public night.

The weekend of March 18/19 I will be needing help with the Maple Syrup Festival from 9am to 3pm. We will be doing Solar viewing, and finding Venus and various bright stars if clear. Figure on having a bring a dish to pass the 18th and stay for the evening if clear.
Messier Marathon will be either Friday March 24 or Sat March 25 IF CLEAR. For those unfamiliar with a Messier Marathon – it turns out that the Spring Equinox it is possible to view all 109 Messier objects in one night if clear. The key word is "clear" It is a piece of cake to image all 109 objects with the C-14 and the NP101 scopes. So stay tuned to the E-groups, I will be posting to the "Tues Night Imaging Group" as to when we will be holding this event.

Tues Night Imaging group: Tues nights will continue as usual! I will post to the Tues Night Group when I am going. If you want to join in, send me your email address and I will include you in the list. If you want off the list, let me know as well. We will also try for the two comets that make close approaches to Earth that the professional astronomers would like amateur astronomers to image this winter. See http://www.skyandtelescope.com/observing/worldwide-4p-comet-campaign-needs-your-photos

Comet 45P Honda-Mrkos-Pajdusakova
Beaver Meadow Observatory
February 20, 2017
"Tues Night Imaging Group"
NP101is Canon T3i modified, CLS filter, 4 - 5minute subs - tracked on comet

Comets - **41P/Tuttle-Giacobini-Kresak**, **45P/Honda-Mrkos-Pajdusakova**, will be at close approach till around end of March. So if we get any good clear nights, I will try and image them even if just for fun. Well we finally got an almost clear "Tues Night" on Monday Feb 20! We were able to image comet 45P. By guiding on the comet we were able to take four 5 minute subs with the NP101 and the Clubs Canon T3i modified camera with a CLS filter before the sucker hole closed up. I stacked them in DeepSkyStacker using the comet stacking mode. Also used the AP's pulse guide program to get the scope to track the comet which helped with the guiding. Our image did not turn out as good as the one on SpaceWeather.com for Feb 21, but the results were reasonable for the sky conditions (we were lucky to get the ones we got).

Loaner scopes -

The Observatory has several loaner scopes you can check out for 4 weeks. We have a Celestron 8" on a tracking German Equatorial Mount and a 6" Dobson. If you wish to borrow one of these scope's see Daniel Marcus on a "Tues" night.

Attention Observatory Users:

The Board has approved some software upgrades. We will be upgrading CCDSoft and The Sky6 to The SkyX with T-Point and Camera add-ons. I may wait till NEAF to purchase the software if we think we can get a better deal there. This software upgrade will give us the ability to “Dither” our images. Dithering will allow us to help eliminate any “defects” in our camera’s chips and make for much smother looking images with less processing to get rid of hot and cold pixels/ and banding. When working with really faint objects dithering will help the ST-9 and Canon cameras pickup faint detail. Currently we are tracking tooooo good from frame to frame. With dithering we can use statistics to get rid of the bad data in the frame. The software upgrade will also enable us to automate the T-point corrections to make the C-14 go-tos much more accurate (you will have to control it via computer- it will not help the hand paddle). We will again be able to easily import asteroid/comet data. Should be lots of fun learning a new program. One feature we will have to play with is satellite tracking. Should be a fun summer learning all the new stuff the software upgrades do.

See you at the Observatory
Daniel Marcus

The Sparrows And The Stars.

Animals And Celestial Navigation.

By

Randy Boswell

Beginning with the earliest nomadic wanderers and extending to the operation of modern ships and planes, celestial navigation has been an essential tool. It turns out that mankind is not alone. Scientists now know that animals have been using the skies as well to navigate.

For example, it's known that many types of birds, including most species of Sparrows, navigate by the stars. This was determined in the early 1950's by the ornithologists Franz and Eleanor Sauer. Two decades later during the 1970's more was learned about bird migration. Researcher Stephen Emlen found the star patterns that Indigo Buntings use for their migrations. It was determined that they use the Constellations such as the Big Dipper, the Little Dipper, Draco, Cepheus and Cassiopeia. It was previously thought that the North Star was the focus for these birds since its position remains fixed.

Other research has shown that additional species of birds utilize star patterns as well. For example, when Blackcaps and Garden Warblers were placed in a planetarium under a projected fall sky they headed southwest, which is their normal direction of migration in that season.

In addition to this, researchers have also discovered that birds use the daytime Sun to navigate. In 1951, researcher Gustav Kramer discovered that birds possess a Sun compass that enables them to migrate in a certain direction based on the location of the Sun. Kramer placed European Starlings in cages and used mirrors to alter the apparent location of the Sun

to the birds. The results showed that the birds oriented themselves to a migratory direction that matched a compass direction based on the new apparent position of the Sun.

Along with the birds, it turns out that other animals navigate by the sky. A surprising case in point is the Dung Beetle, also known as the Scarab. These beetles collect the dung from piles left by other animals, which they roll into balls and use for nutrients. In addition, the females use them to deposit their eggs.

In order to do this, they need to quickly roll away the dung balls from the pile so as to avoid other insects from stealing them. And to accomplish this, they need to follow a straight path. In particular, nocturnal South African Dung Beetles were studied to determine how they stayed on course. Biologist Marie Dacke and her team of researchers found that on overcast nights the beetles wandered aimlessly. The same happened on clear nights when the beetles were fitted with tiny hats to block out the night sky. On the other hand, when a clear night sky was in view, even when the Moon was below the horizon, they kept their bearings. Something in the night skies was directing them. Accordingly, Dacke and her team conducted dung-rolling contests among the beetles under the projected skies of the Johannesburg Planetarium. Various scenes were projected, consisting of bright stars, dim stars or the absence of stars. It was concluded that the beetles made use of the Milky Way. This was determined by the fact that when the Milky Way was absent in the projection, even when the stars were projected, the beetles became disoriented. However, when the Milky Way was projected the beetles followed a straight path. It is now thought that these beetles can see the streak of light from the Milky Way and follow its course.

In conclusion, a range of other animals is known to use a form of celestial navigation as well. These include the Sand Flea, Bees, Salmon and Parrot Fish to name a few. **End.**

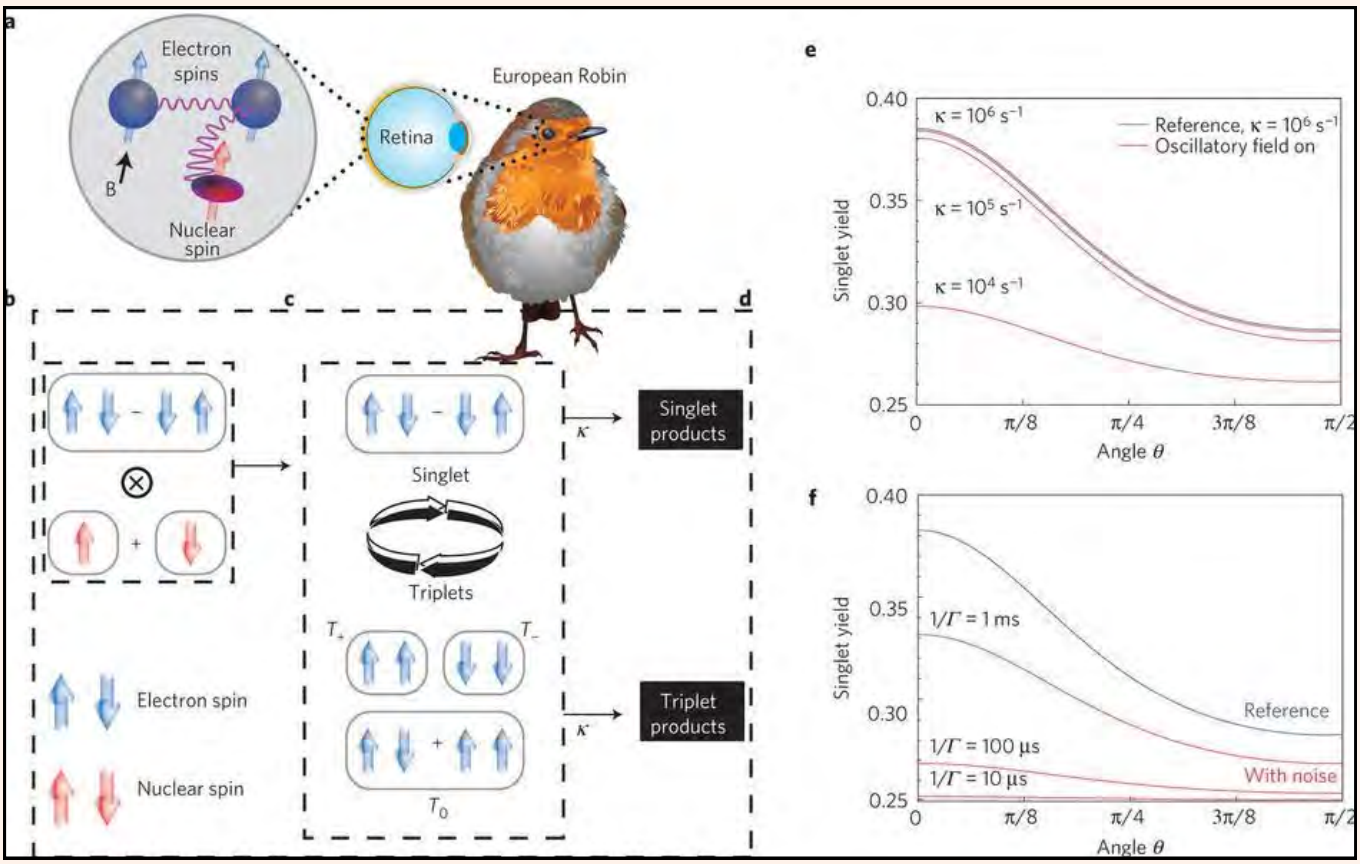
Sources

"The Basics: How Birds Navigate When They Migrate," *Cornell University*, April 1, 2008, https://www.allaboutbirds.org/the-basics-migration-navigation (accessed November 9, 20016).

Dorst, Jean P. "Migration," *Britannica.com*, March 3, 2015, https://www.britannica.com/science/migration-animal/Navigation-and-orientation (accessed November 8, 2016).

"Moon-watching: Studying Birds that Migrate at Night," *Chipper Woods Bird Observatory, Inc.",* November 7, 2016, http://www.wbu.com/chipperwoods/photos/moon.htm (accessed November 9, 2016).

Steward, Doug. "Animal Navigators," *National Wildlife Federation*, January 27, 2014, http://www.nwf.org/news-and-magazines/national-wildlife/animals/archives/2014/animal-navigation.aspx (accessed November 8, 2016).



http://quantum-mind.co.uk/avian-navigation/

Astronomical Events

March

March 12 - **Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 14:54 UTC.
March 20 - **March Equinox.** The March equinox occurs at 10:29 UTC.
March 28 - **New Moon.**

April

April 1 - **Mercury at Greatest Eastern Elongation.** The planet Mercury reaches greatest eastern elongation of 19 degrees from the Sun.
April 7 - **Jupiter at Opposition.** .
April 11 - **Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 06:08 UTC.
April 22, 23 - **Lyrids Meteor Shower.**
April 26 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 12:17 UTC.

May

May 6, 7 - **Eta Aquarids Meteor Shower.**
May 10 - **Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 21:42 UTC.
May 17 - **Mercury at Greatest Western Elongation.** The planet Mercury reaches greatest western elongation of 25.8 degrees from the Sun
May 25 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 19:45 UTC.

June

June 3 - **Venus at Greatest Western Elongation.** The planet Venus reaches greatest eastern elongation of 45.9 degrees from the Sun.
June 9 - **Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 13:10 UTC.
June 15 - **Saturn at Opposition.**
June 21 - **June Solstice.** The June solstice occurs at 04:24 UTC.
June 24 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 02:31 UTC.

July

July 9 - **Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 04:07 UTC.
July 23 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 09:46 UTC.
July 28, 29 - **Delta Aquarids Meteor Shower.**
July 30 - **Mercury at Greatest Eastern Elongation.** The planet Mercury reaches greatest eastern elongation of 27.2 degrees from the Sun

August

August 7 - **Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 18:11 UTC..
August 7 - **Partial Lunar Eclipse.**
August 12, 13 - **Perseids Meteor Shower.**
August 21 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 18:30 UTC.
August 21 - **Total Solar Eclipse.**

September

September 5 - **Neptune at Opposition.**
September 6 - **Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 07:03 UTC.
September 12 - **Mercury at Greatest Western Elongation.** The planet Mercury reaches greatest western elongation of 17.9 degrees from the Sun.
September 20 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 05:30 UTC.
September 22 - **September Equinox.** The September equinox occurs at 20:02 UTC

October

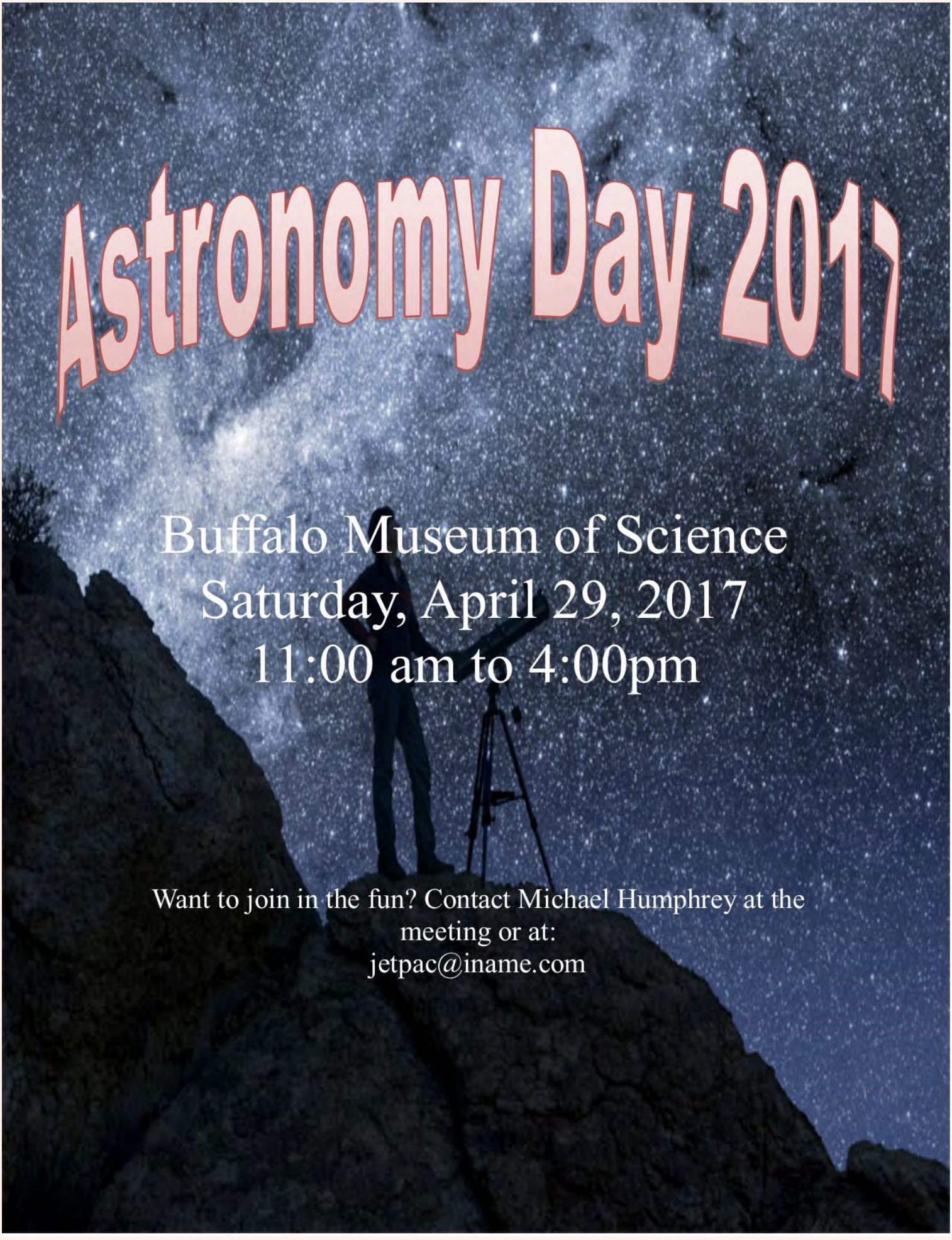
October 5 - **Full Moon.** Moon will be directly opposite the Earth from the Sun and will be fully illuminated as seen from Earth. This phase occurs at 18:40 UTC.
October 7 - **Draconids Meteor Shower.**
October 19 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 19:12 UTC.
October 19 - **Uranus at Opposition.**
October 21, 22 - **Orionids Meteor Shower.**

November

November 4 - **Full Moon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 05:23 UTC.
November 4, 5 - **Taurids Meteor Shower.**
November 13 - **Conjunction of Venus and Jupiter.**
November 17, 18 - **Leonids Meteor Shower.**
November 18 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 11:42 UTC.
November 24 - **Mercury at Greatest Eastern Elongation.** The planet Mercury reaches greatest eastern elongation of 22.0 degrees from the Sun

December

December 3 - **Full Moon, Supermoon.** The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 15:47 UTC..
December 13, 14 - **Geminids Meteor Shower.**
December 18 - **New Moon.** The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 06:30 UTC.
December 21 - **December Solstice.** The December solstice occurs at 16:28 UTC..
December 21, 22 - **Ursids Meteor Shower.**


Astronomy Day 2017
Buffalo Museum of Science
Saturday, April 29, 2017
11:00 am to 4:00pm
Want to join in the fun? Contact Michael Humphrey at the meeting or at:
jetpac@iname.com

Many of you have probably heard several of the members talking about NEAF and wondered….

What is **NEAF 2017?**

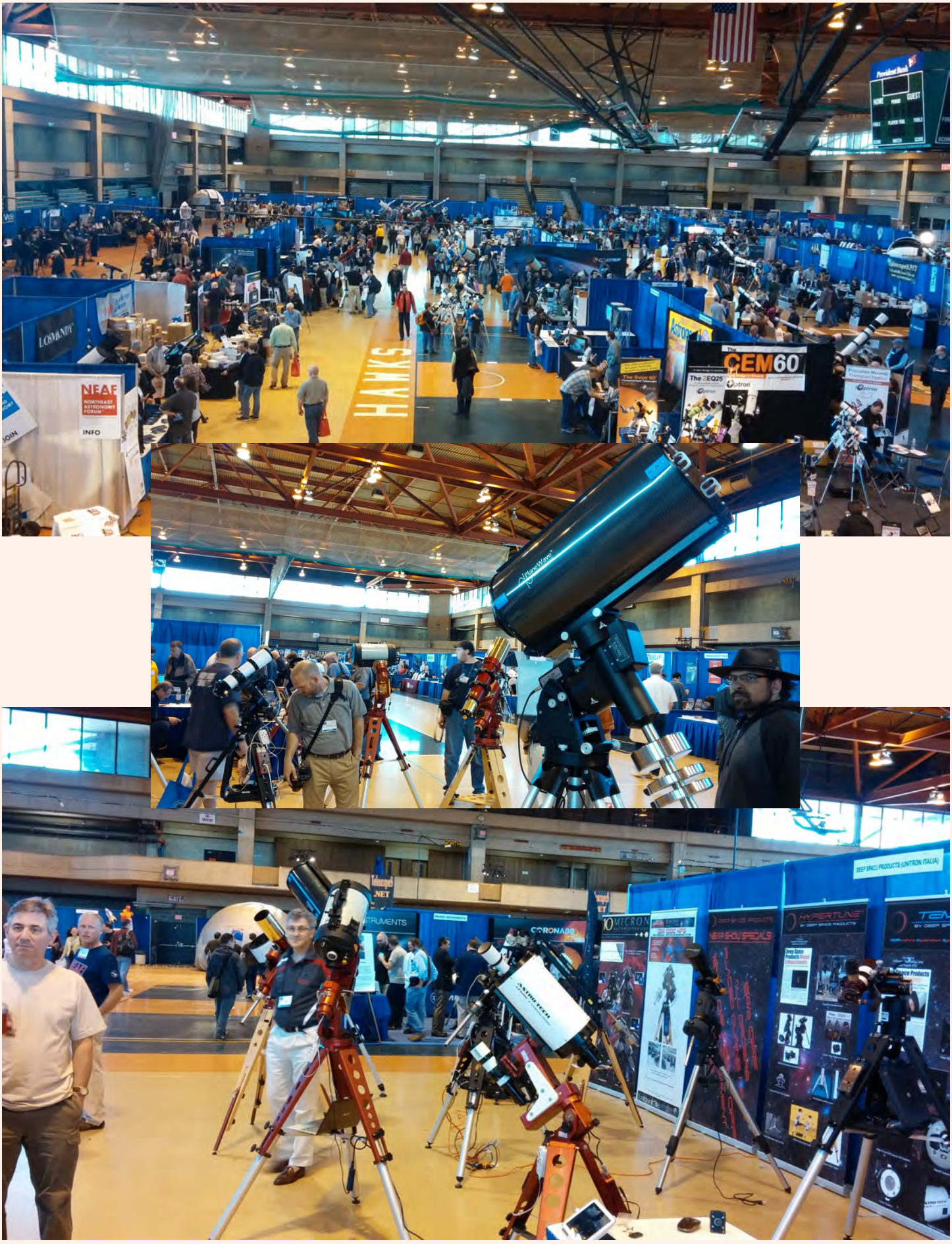
NEAF or Northeast Astronomy Forum

is the World's Largest Astronomy and Space Exposition. Its where astronomers go to listen to speakers and see new products. It's a fantastic mecca of all things astronomy and well worth the trip. There are also great deals on all kinds of "stuff". I could describe the event, but since pictures speak 1000 words, here are 6000.

NEAF April 8 & 9, 2017

Rockland Community College

145 College Road, Suffern, NY 10901


HAWKS
LOMANDY
NEAF
NORTHEAST ASTRONOMY FORUM
INFO
The CEM60
The EQ25
PlanetWave
DEEP SPACE PRODUCTS (UNITRON ITALIA)
HYPERLINE
MICRON
CORONADO


NEAF


MOON RAKER TELESCOPES


ORIES.COM


AstroWare


SPACE OUT YOUR SPACE
MEADE
LX850
STARLOCK
MEADE

https://


HERCULES TELESCOPES
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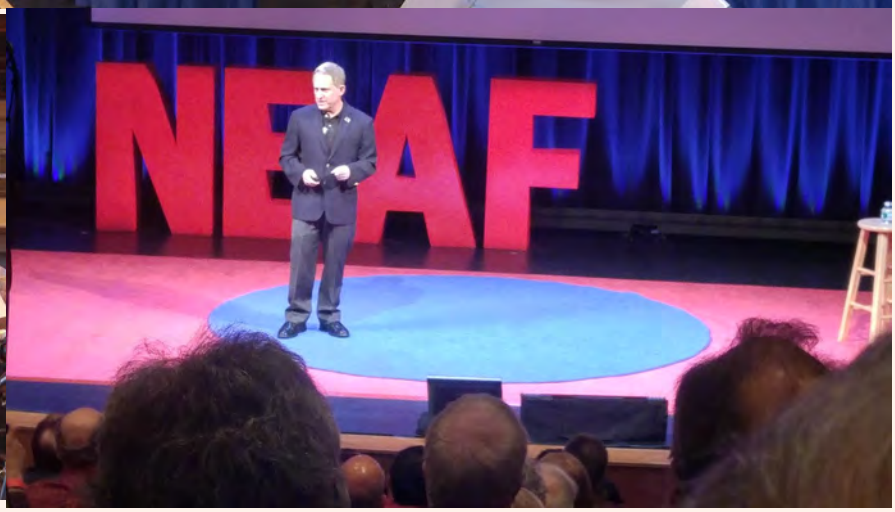
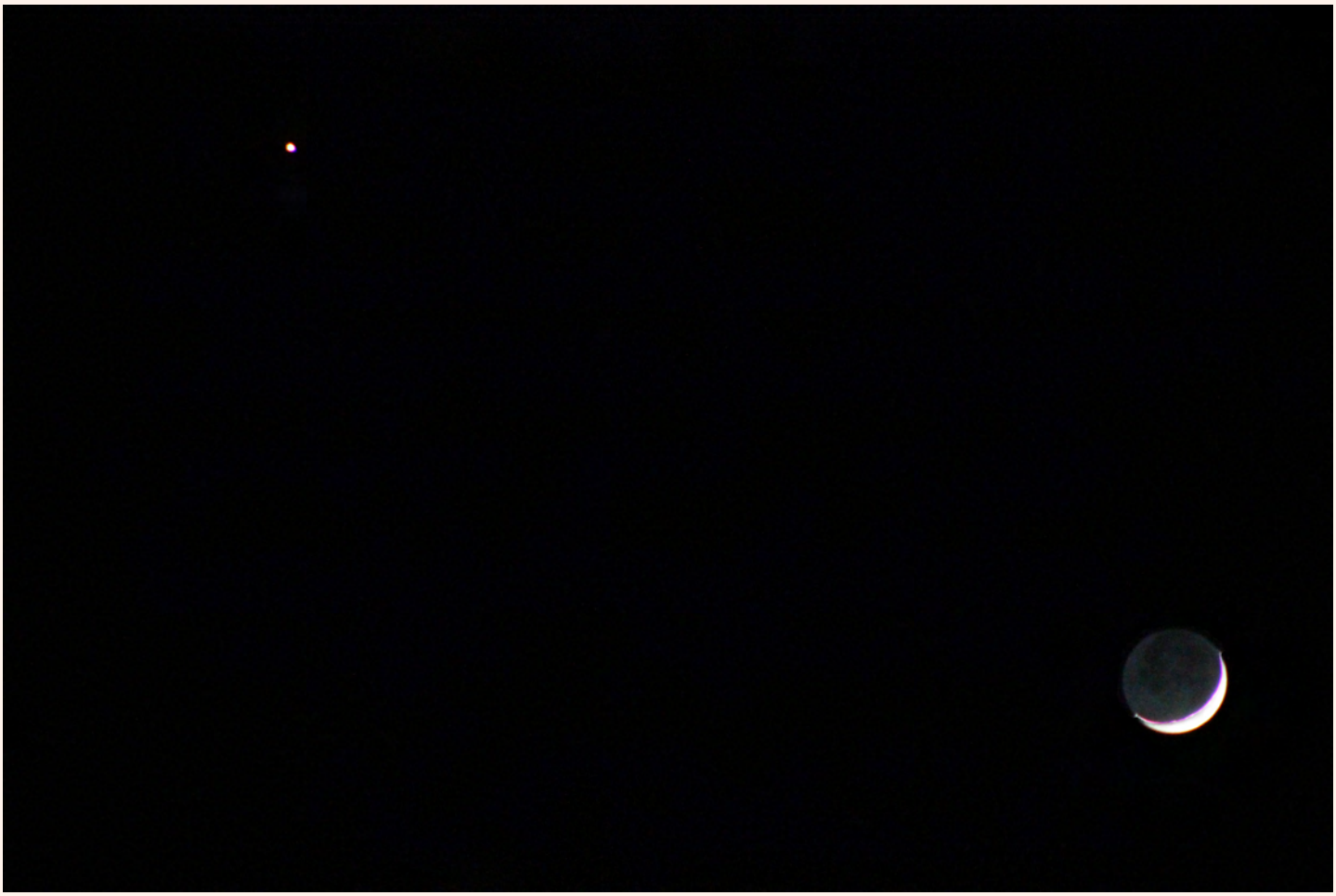

NEAF


EXPLORE SCIENTIFIC
New For 2016


SUPIY


CELESTRON


SONY



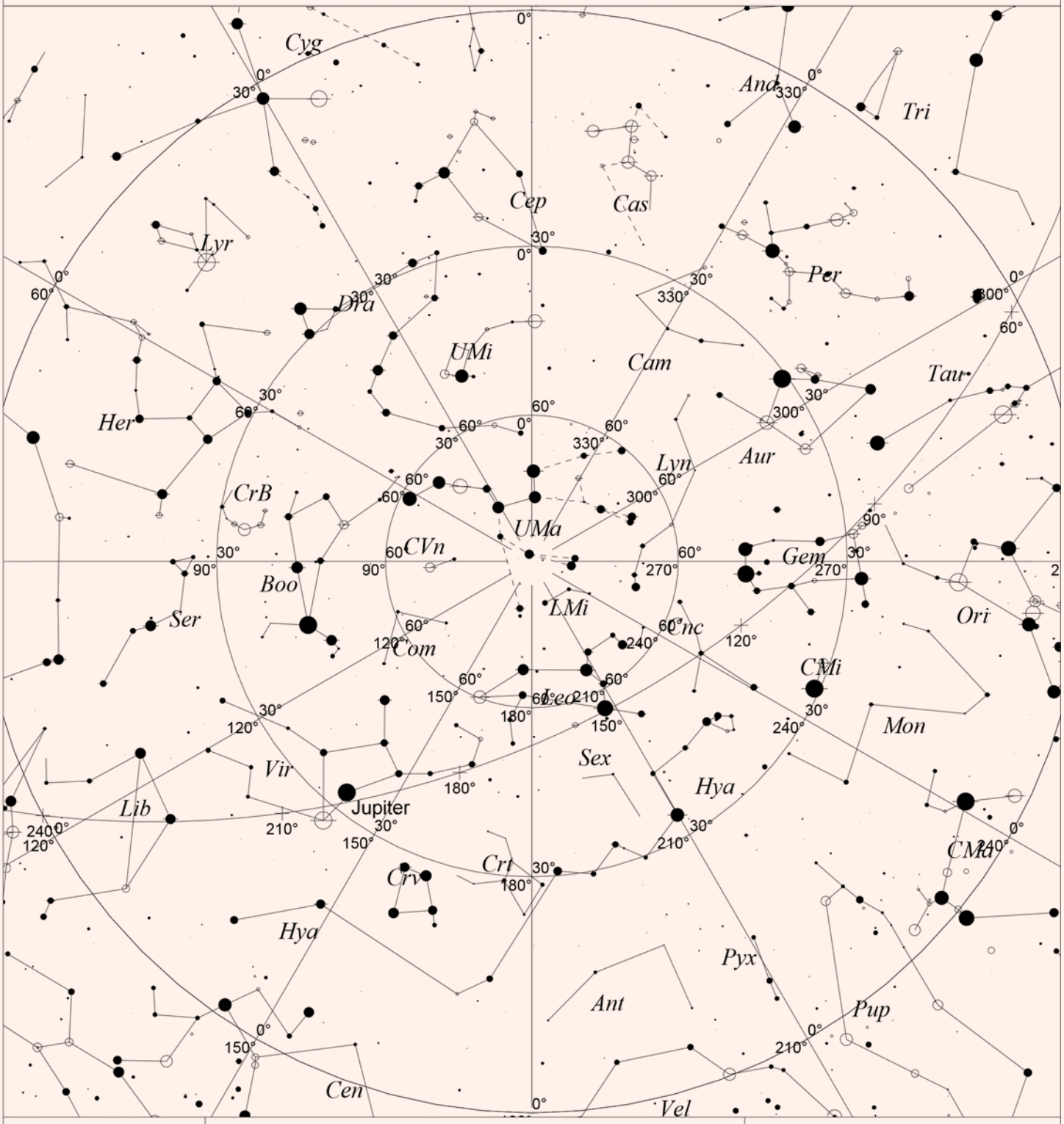
Moon and Venus 1/1/2017 Canon T3I Michael Humphrey

M92

Canon T3I

Meade LX200GPS

Mar 27. 2017 23:00:00



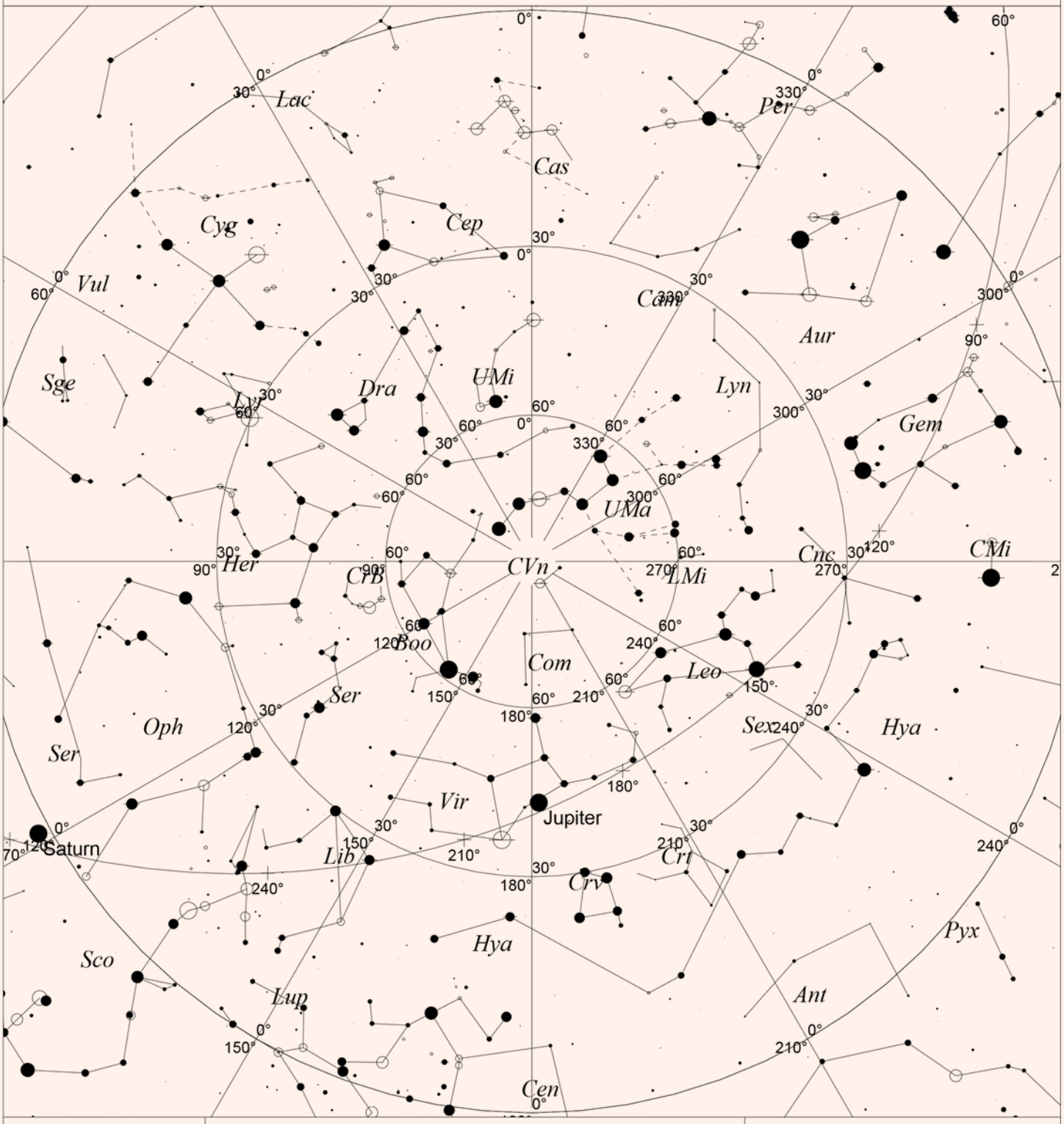
STARS			
<1	3.5
1.5	4
2	4.5
2.5	>5
3	

SYMBOLS		
Multiple star	Dark nebula	Radio source
Variable star	Globular cluster	X-ray source
Comet	Open cluster	Other object
Galaxy	Planetary nebula	
Bright nebula	Quasar	

Local Time: 23:00:00 27-Mar-2017 UTC: 04:00:00 28-Mar-2017 Sidereal Time: 11:07:34

Location: 42° 52' 48" N 78° 52' 12" WRA: 11h07m35s Dec: +42° 52' Field: 182.0° Julian Day: 2457840.6667

Apr 26, 2017 23:00:00



STARS			SYMBOLS				
<1	3.5		Multiple star	Dark nebula	Radio source		
1.5	4		Variable star	Globular cluster	X-ray source		
2	4.5		Comet	Open cluster	Other object		
2.5	>5		Galaxy	Planetary nebula			
3			Bright nebula	Quasar			

Local Time: 23:00:00 26-Apr-2017 UTC: 04:00:00 27-Apr-2017 Sidereal Time: 13:05:51

Location: 42° 52' 48" N 78° 52' 12" WRA: 13h05m52s Dec: +42° 52' Field: 182.0° Julian Day: 2457870.6667

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www.buffaloastronomy.com

Location / Time of Meetings: BAA meetings are held on the 2nd Friday of the month from September to June starting at 7:30pm. Our meetings are held in room C122 of the Classroom Building at the Buffalo State Campus. See map below, building 35.