Monthly Meeting March 11th at 7PM at HRPO
(Monthly meetings are on 2nd Mondays, Highland Road Park Observatory).

Speaker: Don Weinell "When is a Theory just a Theory?"

What's In This Issue?

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- Secretary's Summary
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- Globe at Night
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- Science Academy
- Friday Night Lecture Series
- Special Lecture: “Small Things Move Faster
- Nano Days
- International Astronomy Day”
- American Radio Relay League Field Day

Observing Notes – Lynx – The Lynx & Mythology

Like this newsletter? See PAST ISSUES online back to 2009
Visit us on Facebook – Baton Rouge Astronomical Society
President’s Message

At this month's meeting we will draw for the winner in our Telescope Raffle/fundraiser (see below). You have until the drawing to buy more tickets. After we draw for the telescope we will draw for consolation prizes.

**VOLUNTEER AT HRPO:** If any of the members wish to volunteer at HRPO, please speak to Chris Kersey, BRAS Liaison for BREC, to fill out the paperwork.

**MONTHLY SPEAKERS:** One of the club’s needs is speakers for our monthly meetings if you are willing to give a talk or know of a great speaker let us know.

**UPCOMING BRAS MEETINGS:**
- Light Pollution Committee - HRPO, Wednesday, March 6, 6:15 P.M.
- Business Meeting – HRPO, Wednesday, March 6, 7 P.M.
- Monthly Meeting – HRPO, Monday, March 11, 7 P.M.

**VOLUNTEERS:** While BRAS members are not required to volunteer, if we do grow our volunteer core in 2019 we can do more fun activities without wearing out our great volunteers. Volunteering is an excellent opportunity to share what you know while increasing your skills.

**SALE:** BRAS is having a surplus telescope/equipment.

**Articles:** I want to invite members to write articles for our newsletter. Also, please share your interesting astronomy related trips, events, awards, and experiences by sending a write-up to Michele at newsletter@brastro.org

**Member Pins:** If you have not reserved yours yet, please come to a meeting to pick one up.

**Outreach:** Please check below for Ben’s Outreach Requests. Also, be on the lookout for periodic email notices.

**Remember,** Outreach to our community is a lot of what we do.

**BRAG:** Check below for BRAG’s scheduled meeting.

Clear Skies

Steven M. Tilley, President

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**TELESCOPE RAFFLE/FUNDRAISER.**

Tickets are $5 each, drawing when enough money is raised! You need not be present to win.

" A vintage (c. 2001) Meade ETX 90EC with hard case. 90 Maksutov-Cassegrain reflector, 1250mm focal length (f13.8) on an electronic fork mount with built-in flip-mirror diagonal, additional right angle diagonal, and 8x21 finderscope. It includes two Meade super Plossl eyepieces (26mm & f 9.6mm), Yellow, Blue, Orange, and Neutral Density planetary filters, an ETX Autostar Controller for electronic alignment and goto positioning. It has built-in battery power from 8 AA batteries and a connector for an external power source. It is capable of tracking if it is set into polar alignment mode which requires an additional purchase of a field tripod or tabletop accessory."
At this time, everything has been checked out on the scope EXCEPT the GOTO function. (It's been too cloudy to get outside for a good test run.) We are assuming that it works, but just know that the scope is being raffled AS IS. This is a great opportunity to get your hands on a great little scope with accessories. You'll be able to take a look at it at the meetings."

Secretary's Summary of January Meeting

- President, Steven Tilley, calls the meeting to order at 7:02PM.
- Due to illness, Chris Desselles, was unable to give this month’s talk. His presentation on Astrophotography was given by Scott Cadwallader with Chris’ permission. The presentation covered various methods used for imaging and their results.
- Steven T thanked everyone for attending the meeting then gave the floor to Pontchartrain Astronomical Society President, Bill Johnson. His wife, Lynette, was also with him. She serves are their current secretary.
- Bill talked about their star parties coming up this year, and thanked the club for letting him come check out one of our meetings.
- Steven T then suggested a group trip to the dark sky site in March. Date TBA.
- The BRAS crawfish boil will be held May 18th at the home of John Nagle and Michele Fry.
- LPC chair, John Nagle, gave an update on the revisions to the BRAS Dark Sky Advocacy Page. He also informed the club he won the Texas Star Party lottery and will be attending it this year.
- Steven T announced the final drawing for the Meade ETX will be held at the March meeting.
- Connor Matherne briefly takes the floor to invite everyone to join him for Astronomy on Tap at the Varsity Theater where he will be one of the guest speakers.
- Steven T reminded everyone to pick up their membership badges if they have not received one.
- Outreach chair, Ben Toman, announced the upcoming outreach opportunities and asked for volunteers.
- Raffle drawing was held.
- Meeting adjourns at 8:07 PM.

Submitted by Krista Reed, Secretary

2019 Officers:
- President: Steven M. Tilley
- Vice-President: Chris Desselles
- Secretary: Krista Reed
- Treasurer: Trey Anding

BRAS Liaison for BREC:
- Chris Kersey

BRAS Liaison for LSU:
- Greg Guzik

Committees/Coordinators:
- Light Pollution: John Nagle
- Newsletter: Michele Fry
- Observing Notes: John Nagle
- Outreach: Ben Toman
- Webmaster: Frederick Barnett
Hi Everyone,

Our Outreach endeavors for 2019 are well under way. We had a great outing at Oak Grove Primary and we even had some clear sky for Sidewalk Astronomy in February. Hopefully we can keep that trend going.

A quick thank you to all that have helped out this past month including: John N., Scott C., Scott L., Roz R., Craig B., Chris K., Steven T., Coy W., and Ben T. We couldn't do it without people like you!

We still have PLENTY of opportunities coming up so let me know if you are able to help out. (Especially at the upcoming Rockin' At The Swamp which is coming up soon!!)

**Upcoming Outreach Events**

**Saturday, March 9th**
9am-4pm  
Bluebonnet Swamp Rockin' At The Swamp  
Demo/info and solar observing  
(6 or more volunteers to work shifts throughout day. Sign up for as long or little as you can.)

**Saturday, March 9th**
4pm-8pm  
Mid City Maker's Market  
Telescopes  
(2 or more people needed, but we may not participate due to the Rockin' At The Swamp earlier)

**Tuesday, March 12th**
6pm-8pm  
McKinley Middle Academic Magnet School  
STEAM Night  
Demo/exhibit table w/ possible scope outside  
(3 or more volunteers needed)

**Tuesday, March 12th**
7pm-9pm  
Sidewalk Astronomy at Perkins Rowe

**Sunday, April 7th**
9:30am-5:00pm  
Zippity Zoo Fest at Baton Rouge Zoo  
Demos/exhibits and solar scopes  
(6 or more volunteers needed for shifts throughout the day)
Tuesday, April 16th  
7pm-9pm  
Sidewalk Astronomy at Perkins Rowe

Thursday, April 25th  
5:30pm-7:30pm  
West Baton Rouge Parish Library's STEAM Fair  
Demos/exhibits and possible telescope observing (maybe solar?)  
(3 or more people needed)

Friday, May 10th  
6pm-10pm  
Hot Art Cool Nights at Mid City Maker's Market  
Telescopes  
(3 or more people needed)

Tuesday, May 14th  
7pm-9pm  
Sidewalk Astronomy at Perkins Rowe

Clear skies,

Ben Tomen, Outreach Chairperson

The Whale Galaxy NGC 4631 (aka “the belly of a cosmic whale”) and nearby NGC4627
The NASA Hubble Space Telescope has peered deep into NGC better known as the Whale Galaxy. Here a profusion of starbirth lights up the galactic centre revealing bands of dark material between us and the starburst. More here: https://oneminuteastronomer.com/8647/whale-pup-galaxies/
BRAS Light Pollution Committee Report

This committee meets at 6:15, same day as the 7:00 BRAS Business Meeting
(normally on Wednesday before the Monthly Meeting)
Everyone is welcome to join in.

Meeting called to order by John Nagle
No new members, with 8 members in attendance
January minutes were published in the February newsletter

Old Business: The entire meeting was devoted to the design and content of the Dark Sky Advocacy web pages on the BRAS website.

Committee approved the content and layout of the home page – to be the same design as the BRAS home page, brief questions and answers, brief description of what the BRAS LPC is doing, information/time of the LPC meeting, and contact information.

There will be links on the left side of the home page, just like the BRAS home page. Some of the links suggested are as follows:
Definitions; Origins of Light Pollution; Negative Effects of Light Pollution (Plant, Animal, Human); Benefits of a Return to Natural Sky; Instructions on How to Lessen Light Pollution on Your Own Property; How and What BRAS is Doing to Lessen Light Pollution; Good and Bad Light Fixtures; City/Parish Light Ordinances; BUG System – a New Way to Classify Lighting Zones; How to Report Good and Bad Lighting; Globe At Night Participation; and the BRAS Forums on Light Pollution.

None of these titles have yet been approved, nor in which order they would or should appear. The LPC welcomes any suggestions and participation by any BRAS member. If you have any suggestions, please contact the LPC Chairperson at jonagle@cox.net
Minutes of this meeting read and approved Meeting adjourned.

Submitted by John Nagle, Chairman

From Christopher Kyba, Administrator

Loss of the Night Citizen Science Project

I completed the analysis of the data from our sister “Globe At Night” project and I am afraid I have BAD NEWS. Over the period of 2006 to 2018 the sky worldwide got brighter . . . a lot brighter! The fault may not be LED street lights as it could also be due to increases in total numbers of lights and things like illuminated signs. But the trend is very clear. We need more people to participate in the Globe At Night project during the month of March to help fill in the data we need to submit for a research grant.

BRAS members who can step up and/or spread the word (anyone can participate), here’s the link from our website to help you participate.

GLOBE at Night 2019:
February 26th to March 7th – Orion
March 27th to April 5th – Leo

Instructions to participate in this project are at…
BRAS Astrophotography Group (BRAG)

No February meeting.
For more detailed information, contact Scott Louque, slouque at att dot net.

Free The Milky Way Campaign
used to be the 20/20 Vision Campaign, recently renamed by the Light Pollution Committee.

This campaign’s goal was to raise the SQM measurement at HRPO’s back viewing pad to 20.0 by HRPO’s 20th anniversary. That date past, we decided to keep the effort going until the goal is reached, however long that takes.

Recent Entries in the BRAS Forum
Below are selected additions to the BRAS Forum. There are also nine active polls. The Forum has reached 5800 posts.

The Jet Propulsion Laboratory’s “What’s Up” Videos Resume
Amateur Radio License Classes Begin 7 March
Connor Matherne’s Astrophotography Showcased by 225
Computer Recommendations for Astrophotography Processing
Moon Shot with Pixinsight
Opportunity Mission Officially Ends
Valentine’s Night Lunar Halo Appears over Baker

MY VERY EDUCATED MOTHER JUST SHOWED US NINE PLANETS.

08-14

MERCURY, VENUS, EARTH, MARS, JUPITER...

SATURN, URANUS, NEPTUNE, PLUTO!

BUT, GRANDMA, PLUTO WAS DOWNGRADED TO A DWARF PLANET. IT’S AdIqS, BABY!

MANY VAUNTED EGGHEADED MEDDLERS JUST SIMPLY UNID THE NINTH!

OH, GRANDPA!
Members’ Corner

Here’s where we feature articles and photos about BRAS members’ astronomy-related accomplishments and adventures outside of BRAS activities (as if there were any spare time for such things!)
Send your contributions to Michele at newsletter@brastro.org

On February 13th, BRAS member Conner Matherne, a geophysics and geology LSU graduate student, gave a feature slide presentation at Astronomy on Tap at the Varsity Theatre.

Videos of each monthly presentation will soon be available online, they announced.

Here’s a link to a slide show of Conner’s presentation, plus a writeup of Astronomy On Tap’s mission and monthly programs. http://www.lsunow.com/daily/astronomy-on-tap-creates-casual-learning-environment/article_33499740-33ab-11e9-befb-3775c9b0ca3.html

Photos above and below by Michele Fry:

Additionally, Michele took advantage of this very “astro-ccasion” to celebrate John’s birthday (Feb. 12th) by bringing a big cheese cake to the event, and inviting family and friends to share in his day. Several BRAS members there joined in for this group photo by the bar. Talk about an easy, exciting, and “relevant to John’s interests” birthday party! It was perfect for us in every way.
The Main-belt asteroid 6478 Gault (1988 JC1) grew a tail. This asteroid was discovered on May 12, 1988, at the Palomar Observatory by Carolyn and Eugene Shoemaker. 6478 Gault is mostly a stony S-type asteroid given the fact it is a member of the Phocaea family. In January 2019 it was announced that Gault had a tail. Checking old images it was determined that the tail is new. The best idea is that Gault was impacted by unidentified asteroid >500 meter-sized asteroid.
Image © Tel Lekatsas iTelescope T30, Siding Spring 3 x 300 seconds use with permission

Image © Rolando Ligustri iTelescope T32, Siding Spring  use with permission
For more information see:

https://www.minorplanetcenter.net/db_search/show_object?object_id=6478
https://ssd.jpl.nasa.gov/sbdb.cgi?ssstr=2006478

JPL Close Approach Data from December 12, 2018 to February 26, 2019 Distance Nominal < 1 Lunar Distance

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<th>Object</th>
<th>Close-Approach (CA) Date</th>
<th>CA Distance Nominal LD (AU)</th>
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<td>2019-Jan-27</td>
<td>0.13(0.00032)</td>
<td>28.7 (4.8 m - 11 m)</td>
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<tr>
<td>(2019 CN5)</td>
<td>2019-Feb-11</td>
<td>0.31 (0.00079)</td>
<td>27.8 (7.3 m - 16 m)</td>
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As of 2019-02-26, there is

789,069 discovered asteroids (MPC) https://www.minorplanetcenter.net/
19,760 discovered Near-Earth Objects (MPC) https://www.minorplanetcenter.net/
4,050 discovered Comets (MPC) https://www.minorplanetcenter.net/
900 objects listed on JPL's Sentry: Earth Impact Monitoring(JPL) https://cneos.jpl.nasa.gov/sentry/
2,248 objects have been removed from Sentry(JPL) https://cneos.jpl.nasa.gov/sentry/removed.html

For more information read Jon Giorgini's "Understanding Risk Pages" (http://www.hohmanntransfer.com/by/giorgion.htm) (i.e. "A risk-page listing is not a prediction of impact")
The following objects were removed from NASA JPL's Sentry: Earth Impact Monitoring list from 2019-01-28 to 2019-02-23:

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<th>Object Designation</th>
<th>Removed (UTC)</th>
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<tr>
<td>2018 FU1</td>
<td>2019-02-19 15:33:42</td>
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<td>2014 HN198</td>
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Useful Links:
- Guide to Minor Body Astrometry ([https://www.minorplanetcenter.net/iau/info/Astrometry.html](https://www.minorplanetcenter.net/iau/info/Astrometry.html))
- New- And Old-Style Minor Planet Designations ([https://www.minorplanetcenter.net/iau/info/OldDesDoc.html](https://www.minorplanetcenter.net/iau/info/OldDesDoc.html))

**Astronomy Ap Share**

So, members, what’s your favorite Astronomy Ap, and how do you use it? Want to share? Send it to me at newsletter@brastro.org . . . . Add to our list.

*Sky Safari 6 Pro Planetarium App*, shared by John Nagle, February 2019
Messages from HRPO
Highland Road Park Observatory

**SCIENCE ACADEMY**

*Saturday from 10am to 12pm*

*For ages eight to twelve. $5/$6 per child.*

2 March: “Historic Experiments I”
9 March: “Historic Experiments II”
16 March: “Historic Experiments III”

**FRIDAY NIGHT LECTURE SERIES**

1 March: “Apollo 9 50th Anniversary”  Commander James McDivitt, Command Module pilot David Scott and Lunar Module pilot Russell Schweickart comprised the crew of **Apollo 9** in 1969. Their mission was to test the components and behavior of the Lunar Module in Earth orbit; this included operating the LM independently. HRPO Center Supervisor Tom Northrop recounts the mission.
15 March: “The Life Cycle of a Star”  BRAS member Merrill Hess takes the audience through the creation of those celestial objects capable of nuclear fusion, and the different ways their lives can end.
22 March: “Zodiac Dreams”  The popular culture aspects of the Zodiac are fascinating. How do they relate to the reality of the Ecliptic and the Zodiac? How does one find the **Ecliptic and the Zodiac** in the sky?

**ONE-TIME CALLS FOR VOLUNTEERS**

*Friday 8 March, 5:30pm to 7:30pm. One or two volunteers. **The Edge of Night.** Pointing out different objects or passes as they appear or occur.*
*Saturday 26 March, 3:30pm to 7:30pm. One volunteer. **Overview & Expansion.** Basically, front desk duty while other personnel conduct this session for twelve- to sixteen-year-olds.*
*Saturday 30 March, 3pm to 7pm. One or two volunteers. **NanoDays.** Front desk. Experiments and demonstrations related to nanotechnology. Low to moderate difficulty.*
*Saturday 30 March, 7pm to 10pm. Three or four volunteers. **Evening Sky Viewing Plus.** Front desk greeting; physical science demonstrations; marshmallow roast; telescope operation. Low to moderate difficulty.*
*Saturday 11 May, 3pm to 11pm. Fifteen volunteers. **International Astronomy Day.** HRPO’s largest public offering. Front desk duty, telescope operation, physical science demonstrations, children’s ride monitoring, relaying messages, welcome table. Low to high difficulty.*
ONGOING CALL FOR VOLUNTEERS

HRPO periodically needs BRAS volunteers for crafting (gluing, cutting, painting, etc.); training is offered for these easy to moderate tasks. We also have plenty of “grunt work”. We are asking any members with the time to do so to assist. Thank you.

SPECIAL ALERT: DAYLIGHT TIME DISCUSSION

The conversation in the Louisiana State Legislature to eradicate the back-and-forth of Daylight to Standard is probably ending this month. There are two options if the twice-yearly switch is ended: to remain on Standard time year-round, or to remain on Daylight time year-round.

Special Lecture

“Small Things Move Faster”
Saturday 30 March at 2pm
For ages fourteen and older. No admission fee.

LSU physics professor Mette Gaarde will explain how lasers are used to make movies of electrons.

NanoDays

Saturday 30 March from 3pm to 7pm
For ages eight and older. No admission fee.

For the eighth consecutive year at HRPO, big things in the Universe take a backseat to all things tiny. Children and adults alike will be able to see how big they are compared to nanoscale objects; understand how a Scanning Probe Microscope explores the nanoworld; try to pour water out of a nano-cup; learn about nanomaterials used stain-free clothes; have a chance to build models of nanoscale structures; play with liquid crystals; make fluids part in the middle by applying magnets to them.
INTERNATIONAL ASTRONOMY DAY
Saturday 11 May from 3pm to 11pm
Thirteenth Consecutive Year!
Volunteers needed! HRPO will be calling!

RAFFLE TICKETS, $5 EACH

EXPECTED EXHIBITORS...
American Institute of Aeronautics and Astronautics
Baton Rouge Amateur Radio Club
Baton Rouge Metropolitan Airport
Baton Rouge Mosquito Abatement
Baton Rouge Zoo
Bluebonnet Swamp Nature Center
Civil Air Patrol
LIGO
Saint Joseph’s Academy

POTENTIAL RIDES...
18” Dry Slide
Spacewalk
Obstacle Course
Hamster Ball

OTHER...
Adventure Quest
Face Painting
Homemade Comet
Scope-on-a-Rope

Early volunteer sign-up is needed. It is extremely difficult to schedule a volunteer if that person reveals his availability with only two or three days to go. Sign-up now, please!

American Radio Relay League Field Day
Saturday 22 June from 2pm to 10pm
No admission fee. For ages eight and older.

The Baton Rouge Amateur Radio Club will take part in an exciting nationwide emergency exercise. Temporary stations will be set up at HRPO as BRARC joins similar clubs across the continent in an exciting emergency exercise. Some clubs use strictly battery power and solar power. Some clubs use low power outputs
(five watts or less) to make contact with other stations all over North America. Field Day is a twenty-four-hour endurance session of skill and suspense.

The Amateur Radio Service, founded decades ago, is the original “social medium!” Ten of thousands of licensed hams—including high schoolers, college kids, parents and grandparents—communicate day after day from coast to coast.

What can people do in the Amateur Radio Service?
- Talk around the world without the Internet or cell phones.
- Send a message to another country using less electricity than a nightlight.
- Transmit your communication in code—Morse code!
- Speak to astronauts on the International Space Station.

What can adults do in the Amateur Radio Service?
- Earn various awards.
- Have more peace of mind knowing that, unlike the internet, federal law mandates sending identifying information during any communication.
- Increase the chances of their families having contact with the outside world during an emergency, simply by connecting radio equipment to a car battery.
- Collect weather and flight data from a launched balloon.

What can kids do in the Amateur Radio Service?
- Work toward specialized merit badges and patches.
- Steer radio-controlled cars and airplanes, or control robots, using ham-only frequencies.
- Keep a hand-held remote transceiver during camping trips.

Come learn more about amateur (or “ham”) radio at this fantastic annual event. Remember, if you like what you see at Field Day, there will be plenty of friendly “hams” around to tell you exactly what you need to do to obtain your own amateur radio license and start transmitting!
Observing Notes: March
by John Nagle

Lynx – The Lynx
Position: RA 08, Dec. +45

Note: For six years I have been writing these Observing Notes, featuring the 60 constellations we can see before midnight from Baton Rouge, that contain objects above magnitude 10. Beginning with the February 2019 newsletter, I began to recycle and update the constellations, but the Sky Happenings calendar and associated information will be new each month.

Named Stars

Elvashak (Alpha Lyncis), mag. 3.14, 09 21 03.46 +34 23 33.1, is an orange giant star that has exhausted the hydrogen at its core and has evolved away from the main sequence.

Alsciaukat (31 Lyn), “as-sawkat”, “Thorn”, sometimes called “Mabsuthat”, “al-mabsutah”, “The Outstretched Paw”, mag. 4.25, 08 22 50.13 n+43 11 18.1, is an evolved giant variable star. This star has also exhausted its core hydrogen.

Deep Sky:

NGC 2683, “The UFO Galaxy”, mag. 9.8, 08 52.7 +33 25, 9.3’x2.5’ in size, is a very bright, large, elongated unbarred spiral galaxy, peanut shaped, seen nearly edge-on. There are no other notable objects above magnitude 10, but a few past are of note:

NGC 2419, “The Intergalactic Wanderer”, Caldwell 25, mag. 10.3, 07 38 08.51 +38 52 54, 4.7’ in size, is one of the most distant known globular clusters within our galaxy. It is located about 7° north of the star Castor in the Gemini constellation.

NGC 2537, “The Bear Paw Galaxy”, Arp 6, mag. 11.7, 08 13.24 +45 59.5, 1.8’x1.5’ in size, is a compact blue dwarf galaxy located about 3° north of the star 31Lyncis.

NGC 2770, “The Supernova Factory”, mag. 12.2, 09 09.6 +33 07, 3.6’x1.1’ in size, has a very small and bright nucleus. Three supernovas have been observed in this galaxy: SN 1999eh; SN 2007uy; and SN 2008D.

IC 2233, “The Needle”, mag. 12.6, 08 14.0 +45 45, 4.6’x0.5’ in size, is a very flat and thin spiral galaxy that was long suspected to be interacting with the Bear Paw Galaxy. It is now considered highly unlikely due to observations with the Very Large Array showing that the two galaxies lie at different distances.

UGC 4904, MGC+07-19-054, PGC26231, mag. 15.0, 09 18 37 +41 49 44, 0.44’x0.71’ in size, is a galaxy where a supernova impostor was observed in on October 20, 2004. Observations of the suspected star’s spectrum suggest that it shad massive amounts of material in a two year period, transforming from a LBV star to a Wolf-Rayet star, before it was observed erupting as hypernova 2006jc on October 11, 2006.

NGC 2841 group is a group of galaxies that lie in both Lynx and neighboring Ursa Major. It includes the loose triplet NGC 2541(mag. 11.8), NGC 2500 (mag. 11.6), and NGC 2552 (mag. 12.1) within Lynx. NGC 2841(mag. 10.1) itself lies in Ursa Major.
APM 08279+5255 is a very distant, broad absorption line quasar discovered in 1998 and initially considered to be the most luminous object yet found. A foreground galaxy causes gravitational lensing of the image. It appears to be a giant elliptical galaxy with a supermassive black hole at about 23 billion times as massive as the Sun, and has an associated accretion disk that has a diameter of 3600 light years, and has a red shift of 3.911.

Beyond magnitude 10 also are the following: 96 NGC; 168 UGC; 13 IC; 187 MCG; 2 VV; 10 Arp; 7 Abell Galaxy Clusters; 8 3C; 11 C; 1 TON; 1 PuWe; 2 Shk; 1 HCG; 1 IRAS; 1 JnEr; 2 PK, and 6 more objects.

Other Stars:
38 Lyn, HD 80081, HIP 45688, Σ 1334, mag. 3.82, 09 18 50.67 +36 48 10.4, is a visual binary star with the primary being a spectroscopic binary. 38 LynA mag. 3.8 blue-white star, LynB mag. 3.9, LynC mag. 6.6 blue-white star. Separation of A-C is 2.7’. There is an 11th magnitude fourth component at 88” distance.
10 Ursa Majoris, HD 76943, HIP 44248, mag. 3.96, 09 00 38.75 +41 47 00.4, is a star that was originally in Ursa Major, but became part of Lynx with the official establishment of the constellation’s borders. The star is a yellow-white main sequence star at magnitude 4.11 and another star at magnitude 6.18. The two stars are 10.6 au apart, and orbit each other every 21.78 years.
15 Lyn, HD 50522, HIP 33449 mag. 4.35, 06 57 16.60 +58 25 23.0, is a double star system with the primary star being a yellow giant at magnitude 4.7, and the secondary being a yellow-white main sequence star at magnitude 5.8. The two stars are separated by 0.9 arcseconds, and have an orbital period of 262 years.
12 Lyn, HD 48250, HIP 32438, mag. 4.86, 06 46 14.15 +59 26 30.1, is a triple star system. 12 LynA has a 5.4 magnitude; B is at magnitude 6.0; and C is at magnitude 7.3. Separation of A to B is 1.7” and an orbital period of 699 years, while the separation from A to C is 8.7”.
6 Lyn, HD 45410, HIP 31039, mag. 5.86, 06 30 47.14 +58 09 48.4, is an orange subgiant star with one planet in orbit, with an orbital period of 899 days.
HD 75898, HIP 43674, mag. 8.04, 08 53 50.8 +33 03 24.5, is a 3.8 ± 0.8 billion year old yellow star that has just begun expanding and cooling off the main sequence. It has one planet in orbit with a period of 418.2 days.

Stars of interest beyond magnitude 10:
WASP 13, 2MASS J09202471+33525.67b, mag. 10.42, 09 20 24 +33 52 56, has started to swell and cool off the main sequence. It has a planet in orbit that takes 4.35 days to complete a revolution.
XO-4, mag. 10.70, 07 21 33 +58 16 05, is a main sequence star that has a hot Jupiter orbiting with a period of around 4.1 days.
XO-2, mag. 11.18, 07 48 07 +50 13 33, is a binary system with both stars having planets in orbit. XO-2S has a Saturn mass planet at 0.13 au, and a period of around 18 days; and XO-2N has a hot Jupiter with an orbit of only 2.6 days.
XO-5, mag. 12.13, 07 46 52 +39 05 41, has a hot Jupiter that takes 4.2 days to complete an orbit.

Other stars beyond magnitude 10 are as follows: 39 Σ; 5 OΣ; 2 OΣΣ; 2 β; 1 Kui; 3 Aitken; 1 Hu; and 1 ES.

Sky Happenings: March, 2019
what follows pertains ONLY to the current month. Material above is good year after year.)

Mar 1st - 3rd
Dawn: Venus, Saturn, and Jupiter arc across the southeastern sky with the waning crescent Moon initially some 3˚ to the right of Saturn. Follow the ever thinning Moon over the next two mornings as it first moves to 4½˚ to the right of Venus, and then 7˚ to the lower left of
the planet.

Mar. 1st - The Moon passes 0.3° north of Saturn at 12 noon CST, with a possible occultation over the southern North America.
The Moon passes 0.5 north of Pluto at 10 PM CST.
Mar. 2nd - The Moon passes 1.2° south of Venus at 3 PM CST.
Mar. 4th - The Moon is at apogee (252,519 miles or 406,391 km from Earth) at 5:26 AM CST, Asteroid Pallas is stationary at 8 PM CST, Mercury is stationary at 11 PM CST.
Mar. 6th - New Moon occurs at 10:04 AM CST, Neptune is in conjunction with the Sun at 7 PM CST.
Mar. 7th - Asteroid Vesta is in conjunction with the Sun at 4 PM CST, A very thin crescent Moon is 8° to the left of Mercury, very low in the evening sky.
Mar. 9th - The Moon passes 5° south of Uranus at 10 PM CST.
Mar. 10th - Daylight Saving Time starts at 2 AM – turn clocks ahead 1 hour.
Mar. 11th - The Moon passes 6° south of Mars at 7 AM CDT.
Mar. 12th - The waxing crescent Moon is at/in the Hyades.
Mar. 13th - Evening: The Moon, still in Taurus, is half-way between Aldebaran and Zeta Tauri.
Mar. 14th - First Quarter Moon occurs at 5:27 AM CDT, Mercury is in inferior conjunction with the Sun at 9 PM CDT.
Mar. 17th - The Moon is 0.5° south of the Beehive (M44) at 7 AM CDT, Double shadow transit of Jupiter starts at 11:33 PM CDT.
Mar. 18th - All night: The waxing gibbous Moon is 2° to the northeast of Regulus at dusk, with the gap between them increasing to 5½° before dawn.
Mar. 19th - The Moon is at perigee (223,307 miles or 359,377 km from Earth) at 2:48 PM CDT.
Mar. 20th - Vernal Equinox occurs at 4:58 PM CDT – Spring officially begins in the Northern Hemisphere, Full Moon occurs at 8:43 PM CDT.
Mar. 23rd - Night: The waning gibbous Moon, in Libra, traverses the sky some 4° from Alpha Librae.
Mar. 25th - Double shadow transit of Jupiter starts at 2:06 AM CDT.
Mar. 26th - Morning: Around 25° separate Jupiter and Saturn in the southeast. Over the next four mornings, the waxing gibbous Moon moves from 9° to the upper right of Jupiter, to in-between the two planets for the following two mornings, and finally 3° to the left of Saturn on the fourth day.
Mar. 26th - The Moon passes 1.9° north of Jupiter at 9 PM CDT.
Mar. 27th - Mercury is stationary at 7 AM CDT, Last Quarter Moon occurs at 11:10 PM CDT.
Mar. 29th - Saturn is 0.05° north of the Moon at 12 AM CDT, The Moon passes 0.3° north of Pluto at 7 AM CDT.
Mar. 30th - Evening: Mars is 3° from the Pleiades.
Mar. 31st - The Moon is at apogee (252,014 miles or 405,577 km from Earth) at 7:14 PM CDT.

Planets:

Mercury – Mercury was at greatest eastern elongation on the evening of February 27th. On March 1st, you can find Mercury 8° above the western horizon about 45 minutes after sunset, with the planet at magnitude +0.1 and a disk 8° wide at 35% illuminated, and it will set about 1½ hours after the Sun. Mercury starts fading rapidly, and by the 6th it is fainter than magnitude 2.0, and on the 7th, it stands 3° above the horizon 45 minutes after sunset, with the one-day old Moon 9° to the planet’s left. On the 8th the noticeably fatter waxing crescent Moon will stand 10° higher. Mercury will reach inferior conjunction with the Sun on March 15th (on November 11th, Mercury will transit the Sun for the last time in 13 years). The planet will re-appear in the morning sky on March 27th, but it will be difficult to acquire it.

Venus – Venus begins March rising about 2 hours before the Sun. During March, the planet will fade from magnitude -4.1 to -3.9, its disk shrinking from 16” to 13” wide, and its illumination increasing from 72% to 81%. As the month opens, Venus will stand only 10° above the southeastern horizon at 45 minutes before
sunrise. After the conjunction with Saturn on the 1st, the waning crescent Moon greets Venus on the 2nd. The two rise together with less than 3° between them. On the 3rd, the Moon hangs 7° to the right of Venus, rising some 30 minutes after the planet. Venus will remain very low in the southeast morning sky before sunrise all month.

Mars – Mars, moving eastwards relative to the background stars, will remain a fixture in the western evening sky all month, and doesn’t set until midnight Daylight Saving Time. The planet will dim during March from magnitude 1.2 to 1.4, with its disk decreasing from 5.3” to 4.6” wide. The planet will spend the first three weeks of March moving eastward against the backdrop of southern Aries, crossing the border into western Taurus on the 23rd, setting up a dramatic conjunction with the Pleiades (M45). The planet will remain within the same binocular field as the Pleiades from March 23rd until early April, and will pass 3° to the south of M45 on the night of March 30/31, while Aldebaran, a 1st magnitude star, lies 12° from Mars.

Jupiter – Jupiter will clear the southeast horizon by 2:30 AM local time in early March, and by 1:30 AM daylight saving time at month’s end. The planets magnitude brightens from -2.0 to almost -2.3 this month, and its equatorial diameter increases from 36” to almost 40”. Jupiter is in Ophiuchus, climbing some 25° above the horizon as twilight commences. On the night of March 17/18, both Europa and Ganymede transit the planet while Io re-emerges from behind the planet at 3:51 AM CDT after being occulted at 1:24 AM CDT. Europa’s shadow starts ingress at 12:33 AM CDT, and egresses at 2:55 AM CDT, while Europa itself transits the planet from 3:01 AM CDT to 5:24 AM CDT. Ganymede’s shadow starts to ingress the planet at 10:58 PM CDT on the 17th, egresses on the 18th at 1:05 AM CDT, with Ganymede itself transiting from 4:05 AM CDT to 6:14 AM CDT. For all phenomena of Jupiter’s moons, see page 51 of the March issue of Sky and Telescope, or pages 231 and 232 of the US Edition of the RASC Observers Handbook for 2019.

Saturn – Saturn will clear the southeast horizon at about 2 hours after Jupiter (about 4:30 AM CST) on March 1st, and just 15 minutes after the waning crescent Moon. Once the planet clears the horizon and is high enough to see, it and Jupiter will shine to either side of the Teapot asterism in Sagittarius, with Saturn on the left or upper left and Jupiter to the upper right. Saturn shines at magnitude 0.6 among the background stars of Sagittarius. On the 1st, the planet is only 10° high as twilight commences, and its altitude nearly doubled by month’s end. The planet will display a 16” diameter globe, with the ring system spanning 36° and tilted 24° to our line of sight.

Uranus – Uranus resides in the southwest of Aries, a region that will lie nearly 30° above the western horizon as darkness falls early this month. The planet will glow at magnitude 5.9. To observe the planet, first find the 4th magnitude Omicron Piscium in neighboring Pisces. Uranus lies 2.1° northeast of this star on March 1st. Only Uranus shows a distinctly blue-green disk, measuring 3.4” across.

Neptune – Neptune is in conjunction with the Sun on the 6th, and so is not visible all month, returning to view before dawn in late April.

Pluto – Pluto can be located on the 15th of March at RA 19 37.3 -21 47.

Sun – The Sun reaches the Vernal Equinox at 4:58 PM CDT on March 20th, marking the beginning of Spring in the Northern Hemisphere.

Moon – The Moon hangs as a waning crescent 3° to the right of Saturn on the morning of March 1st. At dawn on the 2nd, a slender lunar sliver is 4° to the right of brilliant Venus. On the evening of the 11th, a waxing crescent Moon is around 7° to the upper left of Mars, and on the evening of the 12th, the Moon is to the lower right of the Hyades. On the night of the 18th, a waxing gibbous Moon shines near Regulus. The waning Moon is 4° to the left or lower left of Jupiter at dawn on the 27th, and some 3° to the lower left of Saturn on the morning of the 29th. The Rupes Recta (the Straight Wall) takes the form of a long black blade extending from its hilt. Rupes Recta appears best this month on the evening of March 14th, just after the First Quarter phase. It lies on a relatively flat lava plain near the center of a large, half-buried crater on the eastern shore of the Mare Nubium (Sea of Clouds). The Straight Wall has a slope of only 12° to 20°, stretches about 70 miles long, and is 1.5 miles wide, but rises only about 1300 feet above the surrounding plain.

Asteroids – Asteroid 3 Juno is enjoying a four-month run of good visibility, and only two other asteroids currently outshine it. You can find Juno crossing Orion’s Shield, which lies half-way from the southwest horizon to the zenith after the sky grows dark. The best window to find Juno runs from March 11th to 18th,
when Juno crosses the Hunter’s shield and slinks past cluster NGC 1662. On the 16th, the asteroid passes 0.1’ north of 5th magnitude Pi¹ Orionis. Juno spans 170 miles, and its current apparition peaked last November, when Juno shone brighter than it had in 35 years. Positions of Juno, by my estimates, are as follows: On March 11th – a little over 1° northwest of Pi² Orionis; on the 13th – a little over 1° due south of NGC 1622; on the 16th – 0.1° north of Pi¹ Orionis; and on the 18th – a little less than 1° to the east-northeast of Pi Orionis.

Comets – Comet 46P/Wirtanen has faded dramatically, barring an outburst, it should glow at about 10th magnitude in early March – within the range of a 4-inch telescope. Comet Wirtanen will be journeying from southern Ursa Major into northern Leo Minor, at magnitude 11.5. To locate the comet, first find Mu and Lambda Ursae Majoris – the pair of 3rd magnitude stars that mark the Great Bear’s middle paw. Then head 5° west of Mu Orionis to 5th magnitude 19 Leonis Minoris. Then star hop to the following positions in Ursa Major – my estimates of the positions: On March 1st -5½° north-northwest of 19 LMi; on the 3rd – about 5° north-northwest of 19 LMi; on the 5th – about 4.2° northwest of 19 LMi; on the 7th – about 3½° northwest of 19 LMi; on the 9th – about 3° west-northwest of 19 LMi; and on the 13th – about 2.2° west of 19 LMi.

Comet 38P/Stephan-Oterma is in Lynx, starting the month at magnitude 13.4, and ending the month at magnitude 15.3. Positions of the comet are as follows: On March 2nd – RA 08 30.28, Dec. +46 05.7; on the 12th – RA 08 36.15, Dec. +44 47.1; and on the 27th – RA 08 44.29, Dec. +43 14.2.

Comet 64P/Swift-Gehrels, in Taurus, can be found at the following positions: On March 2nd – RA 03 12.74, Dec. +25 04.2 at magnitude 15.2; on the 12th – RA 05 33.40, Dec. +24 31.8 at magnitude 16.2; and on the 22nd – RA 05 53.81, Dec. +23 58.2 at magnitude 17.1.

Meteor Showers – March is a quiet month for meteor observers. No major showers occur, and the only minor showers are best seen from the Southern Hemisphere. The only one of note is the Gamma Normids, peaking on March 24th – it is a dependable minor shower with a zenith hourly rate of at least 3 meteors at maximum activity.

Meteor Showers associated with Lynx: The September Lyncids are a minor shower that appears around the 6th of September. The Alpha Lyncids appear between December 10th and January 3rd.

When to View the Planets:

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LYNX – The Lynx

Johannes Hevelius, the Polish astronomer who introduced this constellation in 1687, wrote that one must be as sharp-eyed as a lynx to see its stars, a reference to the fact that he continued to sight star positions with the naked eye long after other astronomers had adopted more accurate telescopic sights. Lynx fills a blank area of sky between Ursa Major and Auriga that is surprisingly large – the constellation covers a greater area of sky than Gemini, for example. Apart from one third-magnitude star, Lynx contains no other stars brighter than fourth magnitude.

It is not known whether Hevelius had in mind the mythological character Lynceus who enjoyed the keenest eyesight in the world – he was even credited with the ability to see things underground. Lynceus and his twin brother Idas sailed with the Argonauts. The pair came to grief when they fell out with those other mythical twins, Castor and Polydeuces.

The End