

Night Visions

2019 March Issue

Newsletter of the Baton Rouge Astronomical Society

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?



[President's Message](#)

[Secretary's Summary](#)

[Outreach Report](#)

[Astrophotography Group](#)

[Asteroid and Comet News](#)

[Light Pollution Committee Report](#)

[Globe at Night](#)

[Recent BRAS Forum Entries](#)

[Messages from the HRPO](#)

[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](#)



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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

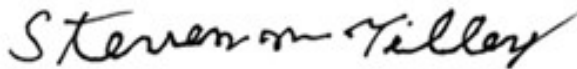
Member Pins: If you have not reserved yours yet, please come to a meeting to pick one up.

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



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 & 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 as 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



BRAS Outreach Report

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)



Ben and Roz at Oak Grove STEAM Night



Roz, Scott C. and Scott L. at Perkins Rowe for February's Sidewalk Astronomy

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)

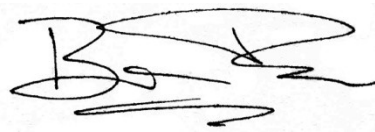
Friday, May 10th

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

Cornered

by Mike Baldwin



“You may have discovered a new galaxy.
We won’t know for certain until you clean
the lens.”



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

Citizen Action Needed Now

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...
<http://www.brastro.org/phpBB3/viewtopic.php?f=29&t=2929>





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.

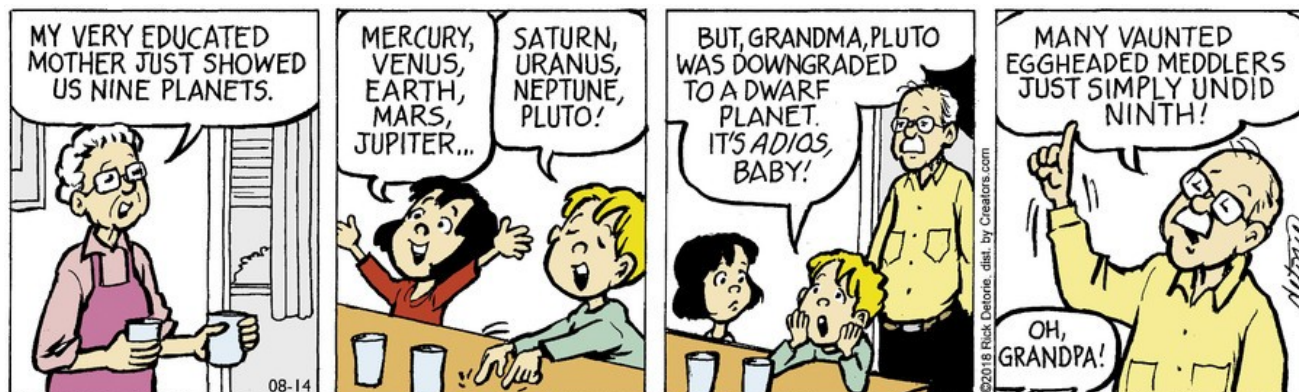
This campaign's goal was to raise the SQM measurement at HRPO's back viewing pad to 20.0 by HRPO's 20th anniversary. That date past, we decided to keep the effort going until the goal is reached, however long that takes.



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





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.

ASTRONOMY
on tap

BATON ROUGE

FREE public talks by your community's experts

Varsity Theatre, February 13th
Begins at 7:00 p., doors at 6:30 p.

Dr. Hannah Jang-Condell
Exoplanets from Infancy to Maturity

Connor Matherne
Shooting for the Stars
(image credit)

Science is even better with beer.

@astrotapBR
astrotapbr@gmail.com
facebook.com/aotbatonrouge

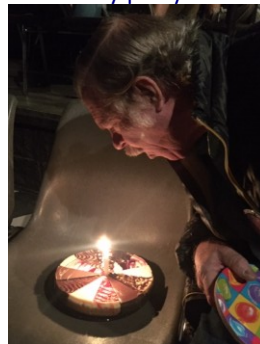


Here's a link to a slide show of Conner's presentation, plus a writeup of Astronomy On Tap's mission and monthly programs.
http://www.lsunow.com/daily/astronomy-on-tap-creates-casual-learning-environment/article_33499740-33ab-11e9-bebf-3775cabf0ca3.html

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

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.



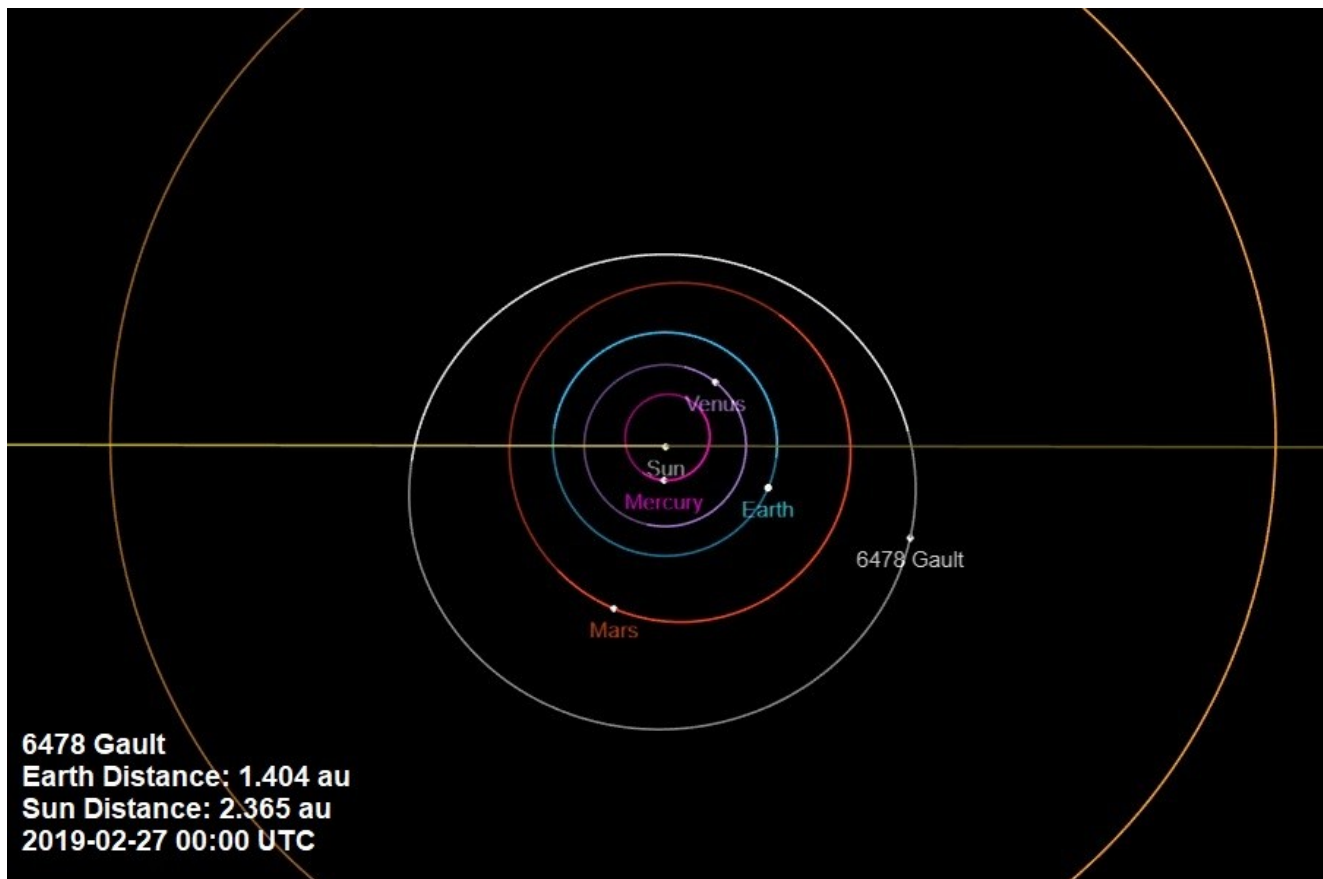
Flying “Rocks” and “Dirty Snowballs”:

Asteroid and Comet News

March 2019

Volume 1. Issue 3.

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.



Orbit diagram 6478 Gault (1988 JCI), courtesy of NASA/JPL-Caltech



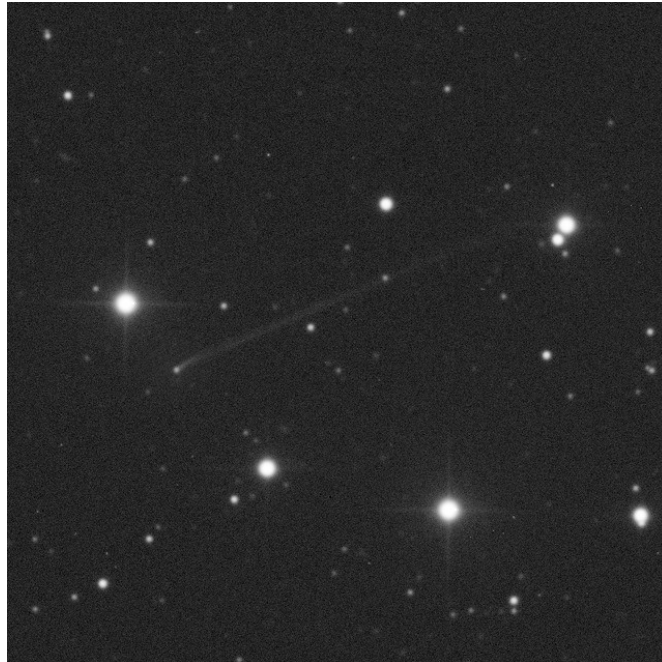


Image © Tel Lekatsas iTelescope T30, Siding Spring 3 x 300 seconds use with permission

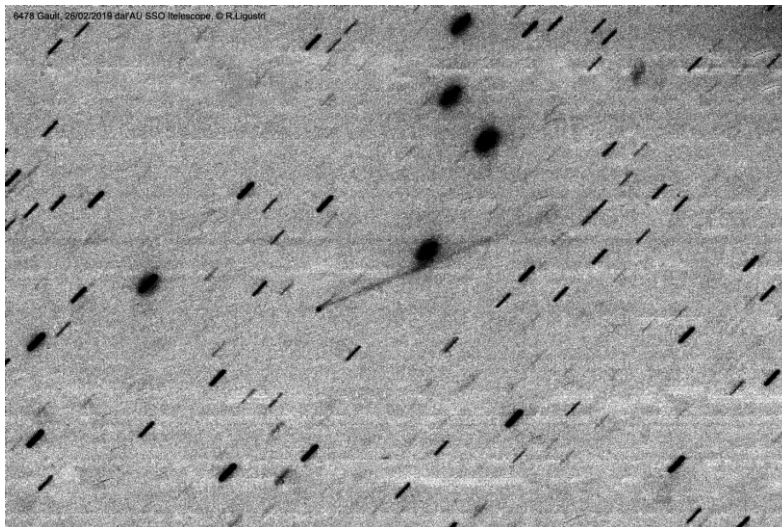


Image © Rolando Ligustri iTelescope T32, Siding Spring use with permission

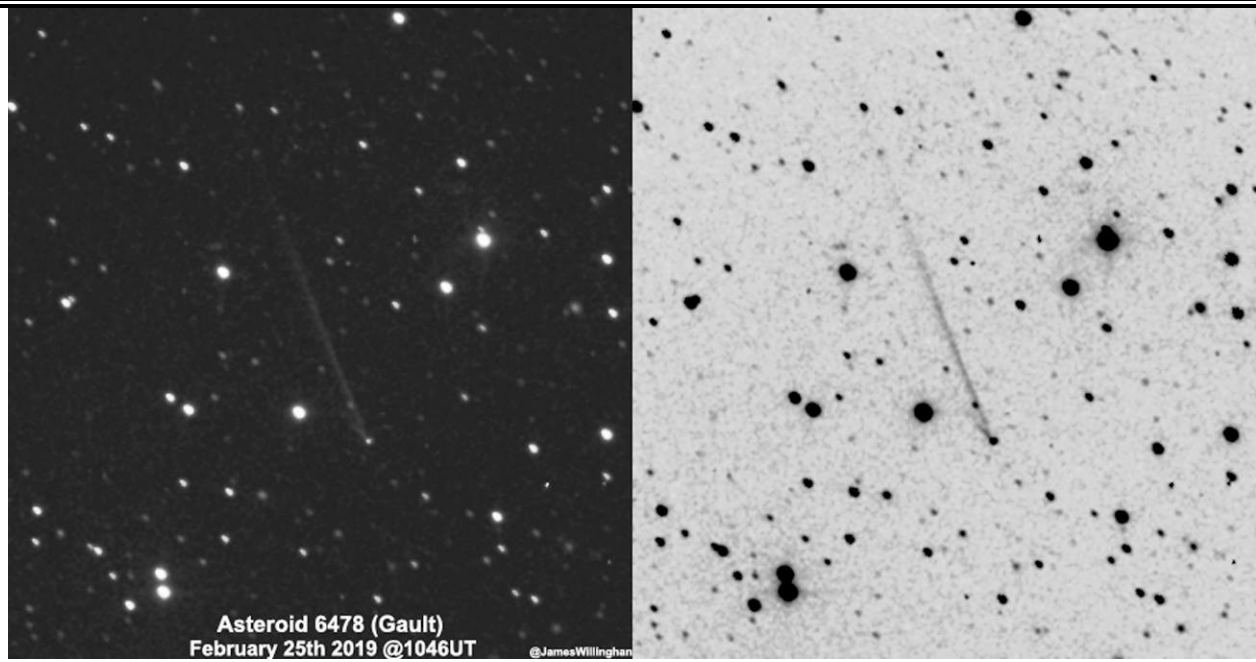


Image © James Willingham iTelescope T30 1x360sec luminance use with permission

For more information see:

https://en.wikipedia.org/wiki/6478_Gault

https://www.minorplanetcenter.net/db_search/show_object?object_id=6478

<https://ssd.jpl.nasa.gov/sbdb.cgi?sstr=2006478>

<https://academic.oup.com/mnras/article/398/3/1512/1267051>

<https://arxiv.org/pdf/1502.01628.pdf>

<http://astroblogger.blogspot.com/2019/01/itelescope-alert-asteroid-6478-gault.html>

[JPL Close Approach Data](#) from December 12, 2018 to February 26, 2019 Distance Nominal < 1 Lunar Distance



Object	Close-Approach (CA) Date	CA Distance Nominal LD (AU)	Magnitude H(Estimated Diameter)
(2019 BZ3)	2019-Jan-27	0.13(0.00032)	28.7 (4.8 m - 11 m)
(2019 CN5)	2019-Feb-11	0.31 (0.00079)	27.8 (7.3 m - 16 m)

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

Object Designation	Removed (UTC)
2014 HK197	2019-02-23 15:27:10
2018 FU1	2019-02-19 15:33:42
2019 CL5	2019-02-17 15:38:36
2019 CY1	2019-02-15 15:41:20
2014 HN198	2019-02-13 15:30:47
2019 BB5	2019-02-12 15:54:14
2016 JL38	2019-02-11 15:34:28
2016 JG38	2019-02-11 15:32:52
2019 CO1	2019-02-08 15:48:46
2019 BP1	2019-02-03 16:25:05
2019 AQ2	2019-02-03 15:50:11
2019 BC1	2019-02-01 17:01:46
2019 AY14	2019-01-29 17:01:02
2015 KA158	2019-01-29 16:03:35
2019 AF14	2019-01-29 00:05:35
2019 AG12	2019-01-28 16:38:58

Useful Links:

- Guide to Minor Body Astrometry (<https://www.minorplanetcenter.net/iau/info/Astrometry.html>)
- How Are Minor Planets Named? (<https://www.minorplanetcenter.net/iau/info/HowNamed.html>)
- New- And Old-Style Minor Planet Designations (<https://www.minorplanetcenter.net/iau/info/OldDesDoc.html>)
- The Tracking News
(<http://www.hohmanntransfer.com/news.htm>)
- Accessible NEAs
(<https://cneos.jpl.nasa.gov/nhats/intro.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

Saturdays 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.



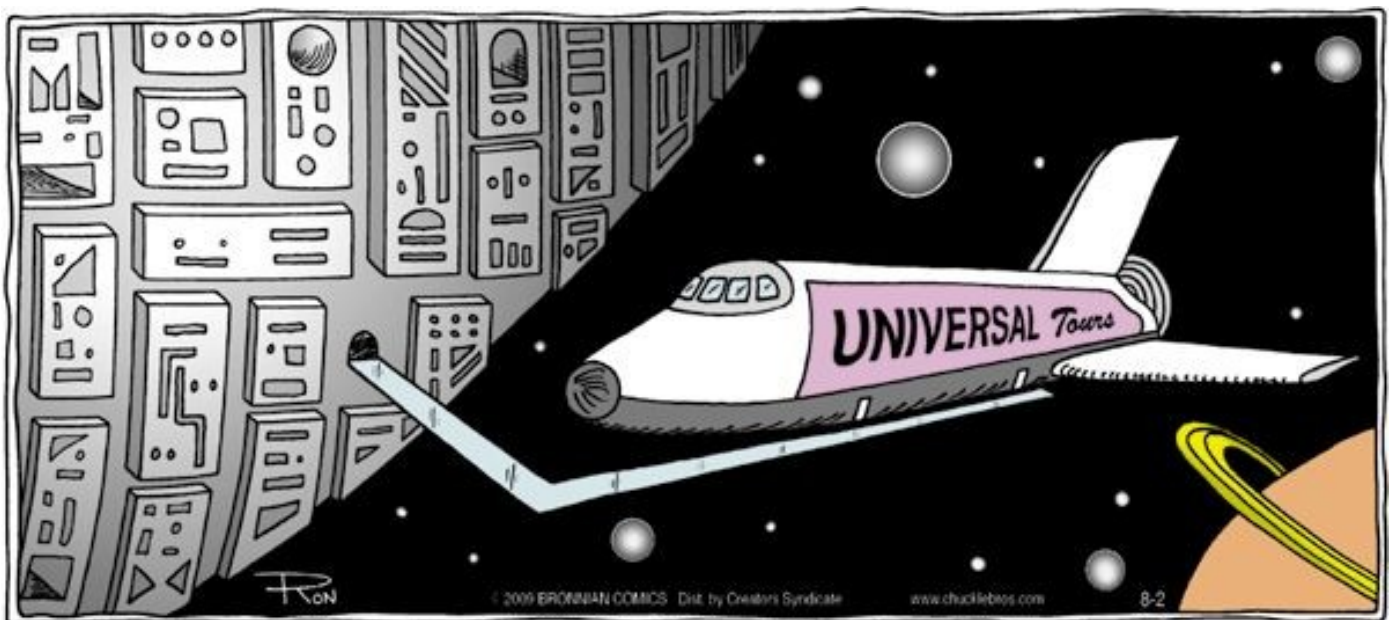
What can adults do in the Amateur Radio Service?

- 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 had 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".

16 Lyn, HD 50973, HIP 33485, mag. 4.90, 06 57 37.112 +45 05 38.8, a main sequence star that was originally known as **Psi Aurigae**, part of **Dolones**.

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 O Σ ; 2 O $\Sigma\Sigma$; 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 planet's 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 starts. 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 or upper 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:



Evening Sky

Mercury (west)
Mars (west)
Uranus (west)

Midnight

Morning Sky

Mercury (east)
Venus (southeast)
Jupiter (south)
Saturn (southeast)

DARK SKY VIEWING · PRIMARY ON MARCH 9TH, SECONDARY ON MARCH 30TH

Mythology:

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

