NASA Missions Detect Record-Breaking Burst, see Page 11 for detail on where to watch the video.

Monthly Meeting November 14th at 7:00 PM, in person

You may also join this meeting via meet.jit.si/BRASMeet

(Monthly meetings are held on 2nd Mondays of the month, at Highland Road Park Observatory)

PRESENTATION: TBA

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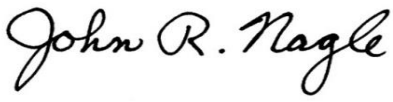
What's In This Issue?

Like this newsletter? See PAST ISSUES online back to 2009
Baton Rouge Astronomical Society Facebook Page
BRAS YouTube Channel – Monthly Speakers via Jitsi

President's Message

- It is November – Officer election season. The nominees for next year's officers are the same as the current officers (President – John Nagle; Vice President – Joel Tews; Secretary – Roz Readinger, and Treasurer –Trey Anding) all are willing to serve another year (then term limits kick in for all but Treasurer. The floor is still open for other nominations, votes will be case at the December meeting..
- The Member Information packet will be ready for next year. Scott C and other members have done a great job in putting it together.
- The equipment for the BRAS On-line improvements (microphones, meeting controller, cables, cameras, etc.) will be ordered soon.
- The telescope and associated equipment for the Library Telescope program will be ordered soon. This telescope will be donated to the Livingston Public Library System.
- LSU has been sent the information on what will be needed to make the Radio Telescope at HRPO operational again. Awaiting a response.
- The next MOON Night will be on November 18th, the same night as White Light Nights with the Makers Market – see the Outreach report.
- HRPO will be celebrating it's 25th Anniversary this month. They will be having a small event to celebrate it. See Chris's report.
- We have now received three quotes for the BRAS magnetic vehicle door signs. The signs will be ordered soon.
- We are looking forward to next year! We will have the equipment for an enhanced web presence and experience.
- BRAS will be hosting the 2023 ALCon (we still need help on the committees!).
- BRAS plans to increase the membership of our society.
- Help BRAS make 2023 a great year!

Clear Skies and Happy Thanksgving to you and your famiy..



John Nagle, 2022 President

P.S. If you haven't turned in your Survey, it's on the last page of this newsletter, and downloadable here: http://www.brastro.org/Documents/BRAS_Survey_for_2022.pdf

November Calendar of upcoming meetings

Light Pollution Committee: NEW TIME thru December: 6 pm Monday, November 10th, one hour before the monthly meeting. (In person only, Open to the public}

Monthly Member Meeting – 7 pm Monday, November 10th at the Observatory, in person and via Jitsi (Open to the public}

Monthly Business Meeting:7 pm Wednesday, October 26th (Members Only), in person and via Jitsi

MOON (Members Only Observing Night) November 18th from sundown to 12 PM or later, at HRPO

ALCon 2023 ("Astronomical Gumbo") Committee Meeting Two meetings: Sunday, November 9, 2022, 7 PM and

- Sunday November 23, 2022, 7 PM, both online.

Monthly Meeting Minutes – October 10th

- Welcome by the president, John Nagle.
- John introduced Craig Brenden as the speaker for the evening. The title of Craig's topic was "Using a Finderscope". In addition to defining what a finderscope is, he discussed the different types of finderscopes and had suggestions about buying and aligning these for your telescope.
- Ben gave reports on outreach and new audio-visual equipment. The Port Hudson event for this Friday is currently up in the air, so this may not be happening. Saturday, Oct. 15th is a big day as there are two events scheduled then. The Makers Faire is going on from 10 am to 5 pm at the Goodwood Library, and the Makers Market (now a quarterly event) is going on from roughly 5 pm to 10 pm; for this our group sets up at the Circa 1857 business on Government St. For the recent Perfins Rowe outreach we had over a 100 people show up (including several teachers) with 9 club members there with half a dozen telescopes. There is an upcoming event in West Baton Rouge on Oct. 21st from 6 to 8 pm; check on the reminder email for details about this. There is also another upcoming event in November, possibly on the 14th. Ben mentioned that they have pinpointed the equipment they want to purchase; now it is just a matter of determining the length of cables needed for the setup.
- Don told everyone that it will be 3 years or longer before we will be returning to Rockefeller due to repairs from storm damage to that part of the coast. He may be also looking for a new spot in Kisatchie for a star party. There was a brief discussion about the Feliciana Retreat Center as Chris and Annette Raby know the new manager there. There were different options mentioned such as working with another group in a setup similar to the one we've done with the National Guard in the summertime that will allow us access on a specific evening, but nothing was decided.
- John mentioned that nominations for officers for next year need to be submitted to him within the next couple of weeks in accordance with the club bylaws. Ben offered to throw his hat in the ring for vice president if Joel was not interested in continuing in that position.
- There was a visitor who was acknowledged and who expressed an interest in the Light Pollution Committee as well as an interest in the club.
- Steven asked for help with ALCON 2023. This includes sponsorship opportunities as well as committee participation.

2022 Officers:

President: John Nagle
president@brastro.org
VP: Joel Tews
vice-president@brastro.org
Secretary: Roz Readinger
secretary@brastro.org
Treasurer: Trey Anding
treasurer@brastro.org

BRAS Liaison for BREC:
Chris Kersey
BRAS Liaison for LSU:
Greg Guzik

Committees/Coordinators:
al_awards@brastro.org
Merrill Hess
lightpollution@brastro.org
??????
newsletter@brastro.org
Michele Fry
observing@brastro.org
John Nagle
outreach@brastro.org
Ben Toman
public_relations@brastro.org
Scott Cadwallader
webmaster@brastro.org
Frederick Barnett

The convention is scheduled for the last week in July next year.

- Trey was asked about the current budget; he said we have approximately $12,000 at this time. He also said he was collecting dues for next year's membership.
- Santiago mentioned that he was planning on going to the dark sky site on the night of Friday, Oct. 21st in case anyone else was interested in going.
- Someone asked about the next MOON Night; this has been scheduled for Nov. 18th.
- Coffee and cookies were available and a raffle was held for those present in person.

Business Meeting Minutes – October 26th

(meeting is the last Wednesday of the month, in person, at HRPO)

1. **New Member Kit** – Scott C. has been working on this. We need to keep the equipment list at HRPO. Email addresses are needed for the awards coordinator and the web master. We need the current copy of the bylaws attached. The heads for the different groups have been removed. We need email addresses in order to set up a listserv/distribution list for notifying members about activities at the observing/dark sky site. Someone suggested Group Me (?) for texting. The contact list for this would need to be revisited every quarter for updating. Scott C. will send this to Ben. There will be a discussion with Marvin about updates to the driving directions and permissions for the dark sky site. All current members as well as all new members will get a copy of the final, finished result of the kit.
2. **Streaming Equipment –** Ben told everyone that this would be a process and that he would be working with Trey as he looks at purchasing and getting everything set up.
3. Magnetic Signs – Chris K. is giving Trey three different quotes. These were all requested with the same specifications to fit on a mid-size car. Trey will review the information this week and respond this weekend.
4. **Library Telescope –** Trey will order the Zumell (?) 114 telescope. There was some discussion about eyepieces for this. Scott C. is doing the research on the items needed to set it up for library usage and will let Trey know what else is needed.
5. **Telescope Donation List** – Chris K. will make a chart/spreadsheet of telescopes donated to the club through him. We need a master list of donated telescopes for IRS purposes. There has been an unofficial list created before; we need a list including the ones coming from Chris K. as well as ones coming from other sources.
6. **Radio Telescope –** John has sent an email to the LSU Physics Department on this. Hopefully we'll have news by the time of the anniversary event in November that LSU will refurbish the equipment and will have it up and running sometime in the near future.
7. Surplus Equipment Sale – This is in progress. We are looking for a simple list with pricing. Someone was asking about the red binder with the pictures; we believe that this is in the BRAS closet.
8. **MOON Night –** This was originally scheduled for Nov. 18th, but there may be a problem as there is an outreach this night (White Light Night) along with other events for other people happening. Ben will check into the possible outreach conflict.
9. St. Francisville Library Telescope – There was some discussion about what this request was. It turns out that they were just looking for help in assembling any telescope they wound up purchasing for their library. We agreed to do this and are waiting for them to let us know what they've purchased and to

schedule a time to set it up.

10. **HRPO's Website –** BREC contacted Professor Penny at LSU about transferring the HRPO website from LSU to BREC. There was discussion about this as the layout of HRPO on the LSU website seems outdated. Chris K. will discuss this with Darryl the next time he meets with him.
11. **Programming for November Meeting, etc.** – Scott C. is going to check with Colin Turley to see if he's available; John needs to know ASAP in order to find someone else in case it doesn't work out. John talked to Tabby who said she would be happy to do a lecture for one of the meetings next year. Chris K. will be sending out emails tomorrow about the HRPO 25th anniversary event; he reminded everyone that there would be no separate Night Sky Conference this year. There was a request for an update on the Cooperative Endeavor Agreement. LSU has already handed in 14 pages of their part to BREC. There was a discussion about having a meeting with Merrill as Darryl at BREC was already talking to the legal department there about this.

Members attending this evening were John N., Ben T., Chris K., Scott C., Steven T., Thomas H., Joel T., Trey A., and Roz R.

Submitted by Roz Readinger, Secretary

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BRAS subreddit and a Discord server.

Our subreddit has been set up for us to reach out to the public. Please join us on there. **https://www.reddit.com/r/BRAstro/**

Our Discord server is for Members only, and requires the download of a free app. It's a fun place for us to hang out. **T**o join the discord, email **safey2007@gmail.com** with the subject **BRAS Discord**.
To add a Flair next to your username, PM Amy Northrop.
.For Discord help, access **techsupport-faq**,
or message Amy orJustin: **https://discord.gg/6N8r8DDj**
It also has voice channels so that you can speak to people through Discord.

The best part about both of these is that you can access them on your phone with the free apps. Hope to see you there. ~ Amy Northrop

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Outreach Report for October

Hi Everyone,

We had a very successful couple of outings this past month and the clear skies have been welcome. The month started with a great **Sidewalk Astronomy event at Perkins Rowe**. We had a bunch of people come by and a lot of teachers/educators were out that night so we made some great contacts. We had to have patience for the first hour or so until the clouds moved away, but when they did we had great views of the Moon, Jupiter and Saturn. The folks were in awe!

We also took another trip up to the **Port Hudson Historic Site** for another School Day. It was a smaller group, but we still interacted with around 100 or more kids!

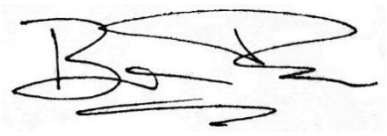
Our next big outing was the **Mini Maker Faire** on the morning and afternoon of October 15th followed by the Mid City Makers Market that same evening.

Again, both events were fun and we had a great time engaging with the people. I got a bunch of pics on my phone – sharing them here.

Finally, based on a request we got from someone that saw us at Perkins Rowe, we were able to participate in the **West Baton Rouge Museum's excellent Halloween event**. We had 3 scopes set up and pretty much had lines at all of them for the entire event. I'd say we engaged close to 200 people or more. We are always very enthusiastically received when we do outreaches over there!

Thank you so much to our hard working volunteers. You all know who you are...but for the rest of you, they were: **Craig, Chris R., Chris K., John, Roz, Scott, Coy, Troy and Ben**. We'd love to see some more new faces showing up to help out so be sure to see the list of upcoming opportunities below. You'll be happy you did it!

Clear skies, Ben Toman



Troy with his scope he had just picked up that day. He brought it down to Perkins Rowe for his first light with it. Roz is clearly amazed, too :)

John showing off the Moon to a patron at Perkins Rowe

Upcoming Events

Wednesday, November 2nd
6pm-9pm
Sidewalk Astronomy at Perkins Rowe

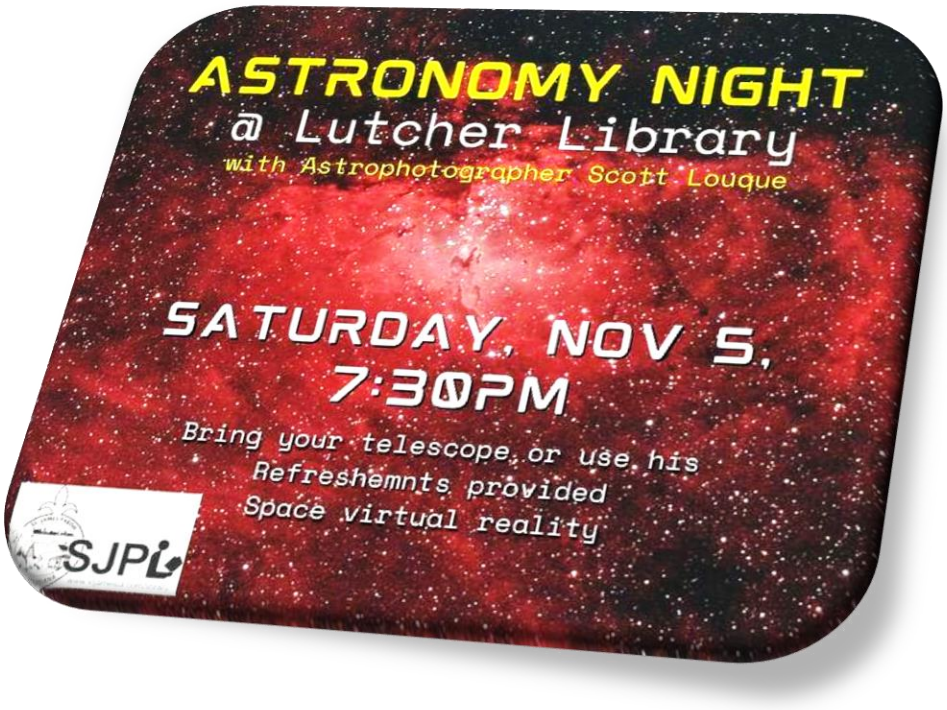
Thursday, November 17th
5:45pm-7:30pm
Louisiana Master Naturalists of Greater Baton Rouge
Hilltop Arboretum
(brief telescope viewing to start followed by a presentation. Their theme is "Winter Solstice Celebration" and they thought it would be neat if we could add some talking points related to that.)

Tuesday, December 6th
6pm-9pm
Sidewalk Astronomy at Perkins Rowe

Saturday, December 17th
5pm-9pm
Mid City Makers Market

Coy using his cool H-alpha rig to show off some solar flares at the Mini Maker Faire, EBRP Main Library on Goodwood Ave.

!!!!!!November 5th, a special outreach request!!!!!!



Our own member, Scott Louque, is hosting an Astronomy Night at the Lutcher Library, and could use some help. Set up your own telescope, or just help him talk up astronomy to the public.

Ben talking with some school kids about the solar system at Port Hudson Historic Site

Scott, John and Roz (in tent) at Mini Maker Faire, EBRP Library, photo by Michele

Coy points out Saturn to some patrons at Perkins Rowe

Scott and Chris (background with binos) engaging with patrons at the West Baton Rouge Museum's Halloween event

LPC (Light Pollution Committee) Report

(NEW SCHEDULE thru December

: Meetings will be at 6 p.m. before the Monthly Meeting, which is held the 2nd Monday of each month. The public is welcome to join in.

- The LPC Petition Update has been sent out to the petition signers.
- A generic letter (can be modified for individual circumstances) for the concerns BRAS has about LP is being drafted to be sent to all new developments we can in the Greater Baton Rouge Area. Please let the LPC know of any new developments/construction in your neighborhood.
- Construction developments discussed: The I 10 improvements – an e-mail was sent about BRAS concerns. The answer stated that the fixtures will be zero BUG (Backlighting, Uplighting, and Glare), and all will be dimmable; the Highland Road/Siegen Intersection – an e-mail was sent to MOVEBR, received, answer – no new lighting will be installed with best practices being followed to minimize any light pollution from the street lighting; University Lakes Project – an e-mail was sent to the Principle Landscape Architect, awaiting answer; Old Hammond Highway Project – a separate e-mail sent to each of MOVEBR websites about Phases 1- A and B, Phase C, Phase 2, and Phase 3 – awaiting answers from each; and the BREC Little Farms Park in Zachary.
- Committee determined that pictures are to be taken of any, and all new developments if possible – take pictures of developments in your area and send them to the LPC.
- Chris K to talk to DOTD about complaints received by HRPO. BRAS members should talk to their city councilperson about LP concerns.
- The LPC is studying the procedure to get the Unified Development Code (UDC), that governs light pollution in the Baton Rouge area, light level constituting a violation changed for a lower value.
- BREC has a standing invitation to represent the voice for BRAS and the LPC at the city council.
- An outreach idea was discussed – Parks at Night – telescope viewing and discussing Light Pollution at different parks around the GBR area.
- Chris K to write scripts for short You-Tube videos on LP on the BRAS YT channel.
- ALCon 2023 is planning on a panel discussion on LP.
- There will be a LPC meeting format change starting with the November meeting. LPC business to be from 6 PM to 6:30 PM, and from 6:30 PM to 7 PM a public workshop on LP and how to reduce it.

John Nagle, LPC Chair Pro-Tem

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Globe At Night

The target for the Globe at Night program is
Pegasus from November 16th through November 25th.
If you would like to participate in this citizen science program, you can find instructions at
https://www.globeatnight.org
P.S. The “Loss of the Night” app can be used for information and for reporting your observations.

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2023 Astronomical League Convention Update!

HELP! We Need Sponsors!!!

From now on, we will be doing planning and work by way of subcommittees, making use of small group meetings, e-mail, phone, etc, without the need to have the full committee meeting. We have. a lot to get done. If you like to help, please EMAIL Steven M. Tilley steveareno225@gmail.com

We are looking for Sponsors, please check with the ALCon 2023 committee before, so we do not re-ask anyone.

The 2023 ALCON Sponsorship Levels

Level	Price	Benefits
Galaxy	Above $5000	Same as “Solar System” plus a 10-minute presentation[time slots are limited] during the conference.
Solar System	$2000 to $5000	Same as “Star” plus a large logo displayed on all conference signs and all slides used in the conference room between speakers. One full page for sponsor information in the Convention Program.
Star	$1000 to $1999	Same as “Planet” plus small Logo displayed on all conference signs and on schedule display. 1/4 page in Conference Program for logo and sponsor information
Planet	$500 to $999	Same as “Moon” plus Name displayed on Conference Hall display during breaks.1/8 page in Conference Program for logo and sponsor
Moon	$100 to $499	Name listed in Conference program and can provide items for inclusion in attendee bags.

After you sign someone up, let us know and have them send a check made out to "Astronomical League" with **ALCon 2023** in the memo line, to the attention of

Carroll Iorg (AL President)
Astronomical League
9201 Ward Parkway, Suite #100
Kansas City, MO 64114

ASAP

WHAT HAPPENED ON OCTOBER 9TH?

Astronomers around the world were captivated by an unusually bright and long-lasting pulse of high-energy radiation that swept over Earth Sunday, Oct. 9. The emission came from a gamma-ray burst (GRB) – the most powerful class of explosions in the universe – that ranks among the most luminous events known.

On Sunday morning Eastern time, a wave of X-rays and gamma rays passed through the solar system, triggering detectors aboard NASA's Fermi Gamma-ray Space Telescope, Neil Gehrels Swift Observatory, and Wind spacecraft, as well as others. Telescopes around the world turned to the site to study the aftermath, and new observations continue.

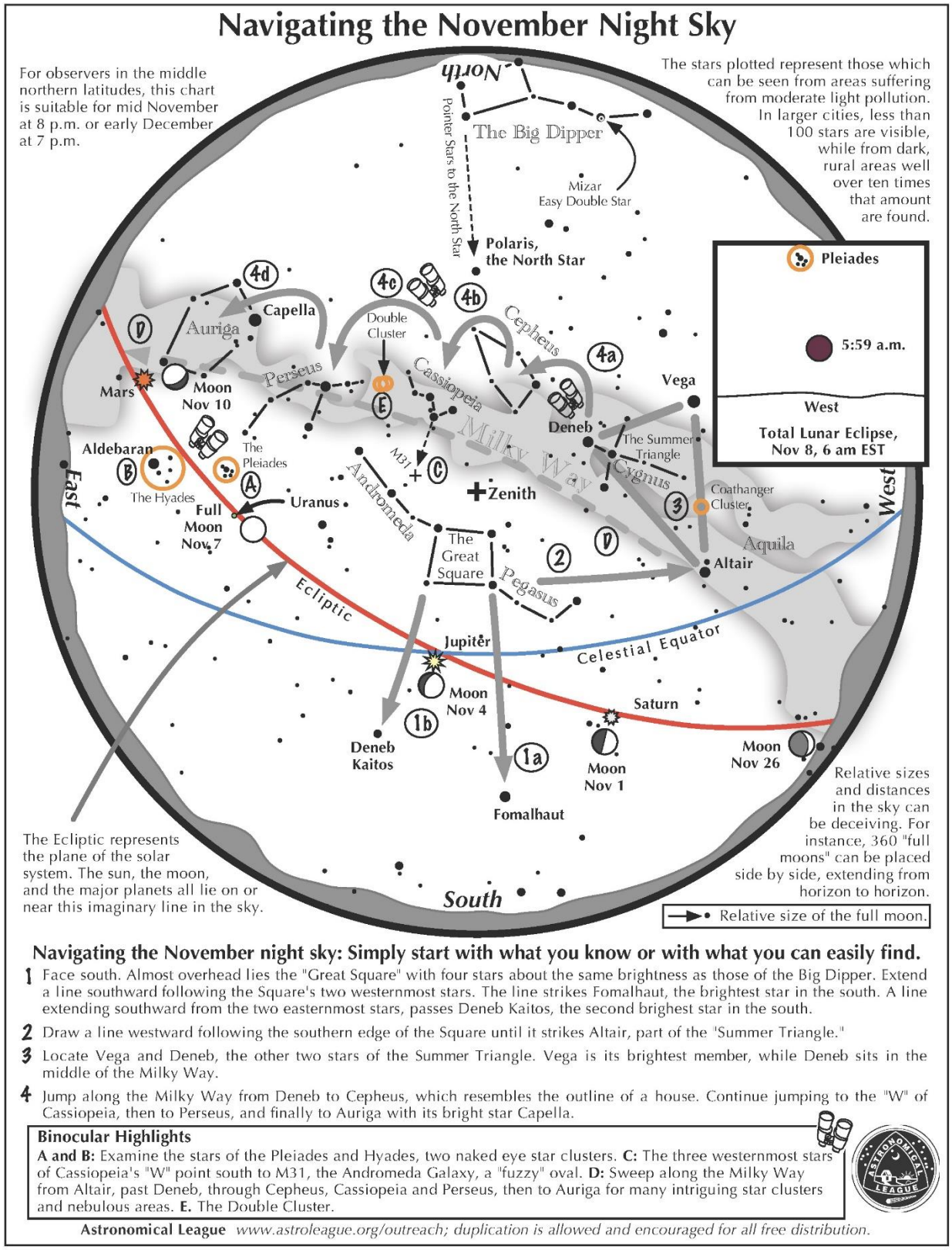
Read more, and Watch a video of this GAMMA BURST as it occurred. Prepare to be awed.

https://svs.gsfc.nasa.gov/14227

Here's a neat chart for our neck of the woods, provided by JPL

Submitted by Craig B.

https://nightsky.jpl.nasa.gov/docs/2022October.pdf



Navigating the November night sky: Simply start with what you know or with what you can easily find.

1. Face south. Almost overhead lies the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend a line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the south. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second brighest star in the south.
2. Draw a line westward following the southern edge of the Square until it strikes Altair, part of the 'Summer Triangle."
3. Locate Vega and Deneb, the other two stars of the Summer Triangle. Vega is its brightest member, while Deneb sits in the middle of the Milky Way.
4. Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, then to Perseus, and finally to Auriga with its bright star Capella.

Binocular Highlights

A and B: Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **D:** Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas. **E.** The Double Cluster.

Astronomical League *www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.*

Messages from HRPO

Highland Road Park Observatory

2022 HRPO DONATION DRIVE

1 October to 31 December / Goal: $1500.

Our annual fundraising drive has been successful for many years. The agreement (as always) is for the public to give us Drive money, as long as we say what we're going to buy, and it is for public program use!

The **"wish list"** is on our website at https://hrpo.lsu.edu/programs/drive.html

There are **three ways to donate**:

(1) Give at HRPO. We can write you a receipt. Only cash or check in person, please.

(2) Mail a check to the BREC Foundation, stipulating "HRPO" in the memo line of your check.

(3) Donate online. Contact the BREC Foundation at (225) 226-7381 to receive instructions for stipulating online donations for HRPO.

FRIDAY NIGHT LECTURE SERIES

7:30pm / For ages fourteen and older. / No admission fee.

4 November = "Operation Freshman" BREC Program Aide James DeOliveira recounts an important incident at the long-forgotten Norwegian front of World War Two. A Nazi nuclear weapons program was on course for destruction, but the British were intent on stopping it!

EVENING SKY VIEWING

No admission fee. For all ages.

Fridays (4 November) from 8:30pm to 10pm

Saturdays (12 and 26 November) from 7:30pm to 10pm

HRPO houses a 50-cm reflector, a 40-cm reflector and several smaller telescopes to bring the majesty of the night sky to the public. Trained operators, sharing duties via a rotating roster, work throughout the year in shifts. Each operator has a pre-planned list of objects to highlight. However, requests will be taken if there is time and if all present have viewed the previous target.

SCIENCE ACADEMY

Saturdays from 10am to 12pm.
*for Cadets aged eight to twelve *$5 per Cadet per week ($6 if out-of-parish)*
four Cadet minimum and sixteen Cadets maximum per session

5 November = "Observing the Universe—Eyes" Cadets will discover the majestic objects that can be spied in a natural sky without any equipment.

12 November = "Observing the Universe—Equipment" Many "secret" clusters, nebulae and galaxies are undercovered with binoculars. Cadets will learn how to do it!

TOTAL LUNAR ECLIPSE

Tuesday 8 November from 2am to 5am / No admission fee. For all ages.

Overnight excitement at HRPO as we open to witness one of nature's most spectacular events! While in the constellation Aries, the Moon will enter the Earth's shadow, turning darker and darker—and then??? The actual color can range from dark brown to red to bright orange to yellow, depending on the current state of the Earth's atmosphere. Don't miss it!

URANIAN OPPOSITION

Tuesday 8 November from 7:45pm to 9:45pm / No admission fee. For all ages.

Uranus is exactly 180 degrees from the Sun, rising as the Sun is setting. We are now the closest we'll be to Uranus this year! The light-blue, high-ice planet (during these years in the constellation Aries) is very compelling. Although rather small due to its distance, its enormous size and unique color allow one to distinguish it from the stars in the constellation Aries. All other outer planets will be seen. Also, the Pleiades!

THE EDGE OF NIGHT (Fall Session)

Friday 12 November from 4:45pm to 6:45pm
No admission fee. For all ages. Binoculars recommended.

It's not light, it's not dark. It's that special time called twilight, and HRPO wants to introduce you to it! Are all sections of the sky the same shade of blue? Which stars are seen first? Are Mercury and Venus or the Moon out? Is that moving object a plane, a satellite or space debris? There is no other time like twilight. Bring it into your life!

SOLAR VIEWING

Saturday 12 November from 12pm to 2pm / No admission fee. For all ages.

Weather permitting, viewing of the Sun's image in three different manners—transferred onto a white surface, directly with safely-filtered optical light, and directly in safely-filtered hydrogen-alpha wavelength—will take place for two hours. Protective clothing and sunscreen are recommended.

HIGHLAND ROAD PARK OBSERVATORY 25TH ANNIVERSARY

Saturday 19 November from 4pm to 12am / For ages eight and older. No admission fee.

The first public night was in 1997. Several asteroid discoveries, public nights, camps, Science Academy awards, STEM-based activities and games, eclipses, transits, occultations and conjunctions later HRPO personnel are planning to serve the public for twenty-five more years!

FALL SPACE EXPLORATION CAMP

Monday 21 November and Tuesday 22 November (8am to 5pm daily)
**for Explorers ages 9 to 13*
**$55 per in-parish Explorer / *$66 per out-of-parish Explorer*

Explorers will build and fly a single-stage chemical rocket, while learning about the upcoming missions to the Moon and Mars, and the latest news about the brightening comet! All materials are supplied; Explorers will need a sack lunch and drink that does not require refrigeration. Explorers will also need to bring a hat and sunscreen. Parents may register in person at the HRPO or online at Webtrac (the activity number is 531180).

STEM EXPANSION: "Mars Mania"

Saturday 26 November from 3:30pm to 7:30pm
For ages twelve to sixteen. / $15 each per in-parish registrant; $18 each per out-of-parish registrant. Advanced registration via WebTrac required [activity #531993].

This program offers advanced topics, topic extensions and all-new games and activities to an older crowd. Certificates will be earned, and a section of archived experiments, some not seen in over fifteen years (and some *never* performed on site) take place. There are also giveaways and door prizes.

OBSERVING NOTES NOVEMBER

Triangulum – The Triangle

Position: RA 1, Dec. +30°

Note: For six years I wrote these Observing Notes, featuring the 60 constellations we can see before midnight from Baton Rouge, containing objects above magnitude 10. For the next three years I expanded that information and put all my research In the same format, ending last April. Beginning with last May, Named Stars, Deep Sky and Other Stars are repeated here, for convenience. Monthly updates will be made to Sky Happenings and all that appears below that title.

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Named Stars

Mothallah (Alpha Tri), from the Arabic "Ras al Mothallah," "The Head of the Triangle," also called Caput Trianguli, mag. 3.42, 01 53 04.90 +29 34 45.80, is a spectroscopic binary star with the close companion at a separation of less than four million miles having an orbital period of 1.736 days. The primary is a yellow-white sub-giant star that is a rapid rotating ellipsoidal variable star. Also known as **HD 11443**, **HIP 8796**, and **2 Trianguli**.

Deltatum (Beta Tri), named after the Greek letter Delta, mag. 3.00, 02 09 32.52 +34 59 14.6, is a main sequence white giant, double line spectroscopic binary star. The secondary star, a yellow-white main sequence dwarf, is calculated to be about 1.4 solar masses at a separation of less than 5 au, with an orbital period of 31.29 days. The binary system shows an excess of infrared radiation. Also known as **HD 13161**, **HIP 10064**, and **4 Trianguli**.

Horna (HAT-P-38), mag. 12.56, 02 21 31.9 +32 14 47, has one planet in orbit.

Deep Sky:

M33 (NGC 598), Triangulum Galaxy, sometimes called the Pinwheel Galaxy, mag. 5.7, 01 33 50.02 +30 39 36.7, 60' in diameter, is the third largest galaxy in the local group (40% the size of the **Milky Way Galaxy**), containing about 40 billion stars with at least 54 large globular clusters in it. It is a source of H_2O maser emission and has a source of ultra-luminous X-ray (**M33-X7 Black Hole**) – it is the most luminous in the local group. There are four bright H II regions – **NGC 588**, **592**, **595**, and **604**. It is very large and very faint; visible to the naked eye in exceptionally dark skies; spiral arms may be seen in a telescope. Located 14° southeast of **M31** or about 7° southeast of **Beta Andromeda**. Also known as **PGC 5818**, **UGC 1117**, **H5-017**, **C502-110**, **C0131.0 +3024**, **MCG+5-04-069, IRAS 01310+3024**, and **LGG 011[G93]002**.

Cr 21, The Putter Cluster, mag. 7.3, 01 51 31 +27 11 41, 7'x7' in size, is composed of 20 stars, detached, weak concentration of stars; medium brightness range; "C" shaped. Might be an asterism and not a true cluster. **IC 1731** is located 4' to the north. Also known as **C147+270**.

Objects in the Triangulum constellation: 80 NGC; 29 IC; 196 UGC; 9 Zw; 131 C, 20 Herschel; 79 C, 1 radio Galaxy; 2 Quasar; 1 Cr; 4 Arp; 117 PGC; 209 MCG; 4 Mrk; 2 AGC; 4 LGC; 1 FGC; 1 KIG; 6 KPG; 2 KTG; 8 WBL; 42 IRAS; 22 KUG; 9 NPM1G; 2 VV; 5 galaxy Trios; 5 Flat galaxies; and 1 ring galaxy for a total of 1006 objects.

Other Stars:

HD 13189, mag. 7.57, 02 09 40.17 +32 18 59.2, is an orange giant star with either a planet in orbit or a brown dwarf star companion. The pair has an orbital period of 472 days with a separation of 1.85 au. Also known as **HIP 10085**.

HD 9446, mag. 8.35, 01 23 20.18 +29 15 54.5, is a yellow main sequence dwarf star with two planets in orbit. The b planet has a mass of 0.7 Jupiter with an orbital period of 30.052 days. The c planet has a mass of 1.82 Jupiter with an orbital period of 192.9 days. Also known as **HIP 7245**.

Stars of interest beyond magnitude 10:

WASP-56, mag. 11.46, 01 44 19.59 +31 41 22.5, has one planet in orbit.

M33X-7, mag. 18.7, 01 33 34.13 +30 32 11.3, is a high-mass X-ray binary star that contains the largest known stellar mass black hole. The companion star has 70 solar masses and an orbital period of 3.45 days.

LSPM J0207+3331, 02 07 33.81 +33 31 29.53, is the oldest white dwarf star to host a circumstellar disk.

There are 5 luminous blue variable stars – some of the most luminous stars known.

Asterisms:

Al Mizän – "The Scale Beam," Alpha and **Beta Trianguli.**

Triangulum Minor (an obsolete constellation), mag. 5.0, 02 20 00 +30 00 00, 90'x68' in size, consisting of **6**, **10**, and **12 Trianguli**.

Stars in the Triangulum constellation: 6 Greek; 15 Numbered; 14 Σ; 17 Lettered; 1 A; 1 Ho; 1 h; 13 ADS; and 1 HAT for a total of 69 stars.

Sky Happenings: November 2022

(what follows pertains ONLY to the current month. Material above is good year after year.)

Nov. 1st - **First Quarter Moon** occurs at 1:37 AM CDT,
The **Moon** passes 4° south of **Saturn** at 4 PM CDT,
Dusk: In the south, the first-quarter **Moon** is 4.5° below **Saturn**.

Nov. 2nd - Double shadow transit on **Jupiter** starts at 7:22 PM CDT.

Nov. 3rd - The **Moon** passes 1° south of asteroid **Juno** at 3 AM CDT.

Nov. 4th - The **Moon** passes 3° south of **Neptune** at 3 AM CDT,
The **Moon** passes 2° south of **Jupiter** at 3 PM CDT,
Evening: The waxing gibbous **Moon** is about 3° to the below left of **Jupiter** in the southeast.

Nov. 5th - The **Southern Taurid** meteor shower peaks at 1 PM CDT.

Nov. 6th - ***Daylight Savings Time*** ends at 2 AM CDT, becoming 1 AM CST.

Nov. 8th - **Full Moon** occurs at 5:02 AM CST with a total lunar eclipse visible for the western half of **North America** – we will see only partial phases,
Uranus will be 0.8° south of the **Moon** at 7 AM CST,
Mercury is in superior conjunction at 11 AM CST.

Nov. 9th - **Uranus** is at opposition at 2 AM CST,
Morning: In the west the **Moon**, one day past full, will be about 3° from the **Pleiades**.

Nov. 11th - The **Moon** passes 2° north of **Mars** (between the **Horns of Taurus**) at 8 AM CST.

Nov. 12th - Asteroid **Euterpe** is at opposition at 10 AM CST,
The **Northern Taurid** meteor shower peaks at 12 noon CST,
Evening: **Mars** rises in the east-northeast bracketed by the **Bull's** "***horn tips***." The **Moon** will follow the trio about 1 hour later.

Nov. 13th - Evening: The **Moon**, **Castor**, and **Pollux** will form a line above the east-northeast horizon,
The **Moon** is 1.7° south of **Pollux** at 6 PM CST.

Nov. 14th - The **Moon** (at a diameter of 29'31") is at apogee (251,606 miles or 404,921 km from **Earth**) at 12:40 AM CST.

Nov. 16th - **Last Quarter Moon** occurs at 7:27 AM CST.
Nov. 17th - Morning: The **Moon**, in the southeast, sits some 6° to the left of **Regulus** in **Leo**,
The **Leonid** meteor shower peaks at 6 PM CST.
Nov. 21st - Morning: The thin waning crescent **Moon** rises in the east-southeast, trailing **Spica** by a bit more than 4°,
Asteroid **Bamberga** is at opposition at 12 noon CST.
Nov. 23rd - **New Moon** occurs at 4:57 PM CST (Lunation 1236).
Nov. 24th - **Jupiter** is stationary at 7 AM CST,
Asteroid **Pallas** is stationary at 7 AM CST.
Nov. 25th - The **Moon** (at a diameter of 32'56") is at perigee (225,450 miles or 362,826 km from **Earth**) at 7:31 PM CST.
Nov. 28th - The **Moon** passes 4° south of **Saturn** at 11 PM CST.
Nov. 30th - **First Quarter Moon** occurs at 8:37 AM CST,
The **Moon** passes 1.2° north of asteroid **Juno** at 6 PM CST,
Mars comes closest to **Earth** (50.6 million miles away) at 8 PM CST.

Planets:

Mercury – Mercury is in superior conjunction with the **Sun** on November 8th and will not be visible all month.
Venus – Venus, just over a week past superior conjunction (on October 22nd), is also not visible all month.
Mars – Mars (about 17° north of **Betelgeuse**) will shine at magnitude -1.2 on November 1st in **Taurus**, near the horns of the **Bull**, rising at about 8 PM local time. On the 1st, the planet will stand due south at around 3 AM local time and by the 30th it is due south by midnight. On the 11th, the waning gibbous **Moon** is less than 2.5° from the planet (magnitude -1.5) between the tips of **Taurus's** horns as morning twilight begins. By the end of the month, the planet will brighten to magnitude -1.8. This month is the time to observe **Mars**. Through a telescope the planet will span 15" on the 1st and will grow to 17" by the 30th. The planet starts the month at 94% illumination and ends the month at 99% illumination. The planet will come closest to **Earth** on the night of the 30th.
Jupiter – Jupiter, in **Pisces** all month, will have a double shadow transit on November 2nd, with the events starting at 3:45 PM CDT with both **Ganymede** and **Europa** starting ingress. **Europa's** shadow starts ingress at 5:30 PM CDT. **Europa** starts egress at 6:15 PM CDT, followed by **Ganymede's** egress at 6:31 PM CDT. **Ganymede's** shadow starts ingress at 7:22 PM CDT (the start of the double shadow transit). **Europa's** shadow will egress at 8:00 PM CDT, followed by **Ganymede's** shadow's egress at 10:08 PM CDT. On November 4th, a bright gibbous **Moon** will stand 3° southeast of the planet (magnitude -2.8). The planet starts the month with a 47" wide disk and will end the month at 44". The planet ends its retrograde motion on the 24th and will resume eastward travel. The moon **Callisto** will appear due north of the planet on the morning of the 2nd and early in the evening on the 18th, and due south of the planet on the 27th.
Saturn – Saturn, at the beginning of November, will be 35° high in the southern sky a little past 7:30 PM local daylight time, and is best viewed soon after dark. On the 1st, the planet is 4.5° north of the **First Quarter Moon** – both located in eastern **Capricornus**. The planet will set about 10:30 PM local time late in the month. The planet starts the month at magnitude 0.6 and will dim to magnitude 0.1 during the month. A telescope will show the rings spanning 38" and an apparent tilt to our line of sight of 15° with the northern face of the rings in sunlight – the rings will appear edge-on in 2025. **Titan**, the planet's largest moon, is at magnitude 8.5. It can be found north of the planet on the nights of November 8/9 and the 24/25, and due south of the planet on the 16th. **Iapetus**, at 11th magnitude, in mid-month, will line up with the planet in the same field of view. On the 13th, the moon will pass through superior conjunction on the far side of its orbit placing it just north of the planet's disk – it will be 12" from the center of the planet's disk or about 5" from the northern limb of the planet.
Uranus – Uranus is in southern **Aries**, at magnitude 5.7, about 7° north-northeast of **Mu Ceti**. To find the planet, look north of **Mu Ceti** for the 5th magnitude star **Sigma Arietis**. Look 3° farther along the same line – the planet's bluish disk will spend the month roughly mid-way between these two stars. The planet will be visible all night, being highest in the sky an hour before local midnight. The planet will reach opposition on November 9th at magnitude +5.6 and have a 3.7" disk. On the 20th, the planet will form a near-equilateral

triangle, 1.8° to a side, with the 5.3 magnitude star **Pi Arietis** and the 5.6 magnitude star **Rho Arietis**. Through a telescope, under good conditions, the planet will reveal a 4" wide disk.

Neptune – Neptune, in extreme northeast **Aquarius**, is about 6.5° west-southwest of **Jupiter**, due south of the **Circlet of Pisces**. The planet, at magnitude 7.7, is between two brighter 7th magnitude stars all month and will be visible until after midnight local time. The two stars are the easternmost pair of a parallelogram of four stars each about 1° apart, located 5° east-northeast of **Phi Aquarii**. During the month, the planet will move from near the northeast star to a point almost due north of the southwest star. A telescope will reveal its dim bluish disk spanning 2".

Moon – The **Moon**, late in the evening on November 14th, will be about 3.5° from the **Beehive Cluster** (**M44**) in **Cancer**. On the 21st, a thin waning crescent Moon will be 4.5° to the below left of **Spica** (**Alpha Virginis**).

Favorable Librations: **Mare Humboldtianum** – November 3rd; **Mare Marginis** – November 6th; **Pingre S Crater** – November 17th; and **Vallis Inghirami** – November 21st.

Greatest North declination on the 13th (+27.4°)
South 26th (-27.3°)

Libration in Longitude: East limb most exposed on the 7th (+5.3°)
West 20th (-6.1°)

Libration in Latitude: North limb most exposed on the 2nd (+6.8°) and on the 29th (+6.7°)
South 16th (-6.8°)

Asteroids / Minor Planets - Asteroid **1 Ceres** – **Ceres** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On November 17th - 11 35.18 +12 26.6, at magnitude 8.7 in **Leo**; and on the 27th – 11 49.21 +11 32.9, at magnitude 8.6 in **Leo**.

Asteroid **2 Pallas** – **Pallas's** positions, according to the ***RASC Observer's Handbook***, **2022 USA Edition**, are as follows: On November 7th – 07 09.89 -24 10.0, at magnitude 8.3 in **Canis Major**; on the 17th – 07 13.69 -26 40.0, at magnitude 8.2 in **Canis Major**; and on the 27th – 07 14.49 -28 53.3, at magnitude 8.1 in **Canis Major**.

Asteroid **3 Juno** – **Juno's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On November 7th – 22 05.59 -12 18.7, at magnitude 8.9 in **Aquarius**; on the `7th – 22 52.87 -12 20.4, at magnitude 9.1 in **Aquarius**; and on the 27th – 23 02.28 -12 00.2, at magnitude 9.2 in **Aquarius**.

Asteroid **4 Vesta** – **Vesta's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On November 7th – 22 05.59 -20 14.0, at magnitude 7.4 in Aquarius; on the 17th – 22 14.35 -19 04.9, at magnitude 7.6 in **Aquarius**; and on the 27th – 22 24.74 -17 46.4, at magnitude 7.7 in **Aquarius**. **Vesta's** positions, ***by my estimates***, are as follows: On November 1st – about 5.8° northeast of **M30** or about 3° west and a touch north of **41 Aquarii**; on the 5th – about 2.5° west-northwest of **41 Aquarii**; on the 10th – about 2° northwest of **41 Aquarii**; on the 15th – about 2° north and a touch west of **41 Aquarii**; on the 20th – about 2.3° due north of **X Aquarii**, or about 3.2° north-northwest of **47 Aquarii**; on the 25th – about 4° north and a touch east of **47 Aquarii**, or 3.3° north-northwest of **NGC 7293**; and on the 30th – about 3.8° due north of **NGC 7293,** or 4° north and a bit west of **Upsilon Aquarii**.

Asteroid **27 Euterpe** – **Euterpe's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On November 7th – 03 18.04 +15 55.0, at magnitude 9.0 in **Taurus**; on the 17th – 03 07.93 +15 22.8, at magnitude 8.9 in **Taurus**; and on the 27th – 02 58.35 +14 54.3, at magnitude 9.2 in **Taurus**.

Asteroid **30 Urania - Urania's** position on November 27th, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, is 04 19.52 +24 57.2, at magnitude 9.7 in **Taurus**.

Asteroid **115 Thyra** – **Thyra's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On November 7th – 03 19.37 +41 43.8, at magnitude 9.7 in **Perseus**; on the 17th – 03 08.31 +40 57.9, at magnitude 9.6 in **Perseus**; and on the 27th – 02 58.34 +39 34.3, at magnitude 9.7 in **Perseus**.

Asteroid **324 Bamberga** – **Bamberga's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On November 7th – 03 38.01 +42 25.1, at magnitude 9.0 in **Perseus**; on the 17th – 03 27.04 +42 04.9, at magnitude 8.9 in **Perseus**; and on the 27th – 03 16.70 +41 06.2, at magnitude 9.0 in **Perseus**.

Asteroid **349 Dembowska** – **Dembowska's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On November 7th – 04 42.90 +28 55.8, at magnitude 9.9 in **Taurus**; on the 17th – 04 39.62 +29 17.7, at magnitude 9.8 in **Taurus**; and on the 27th – 04 29.74 +29 29.1, at magnitude 9.6 in **Taurus**.

Comets **– Comet C/2017 K2 (PANSTARRS),** an evening comet **– K2's** positions, according to ***ALPO***, are as follows: On November 10th – 16 32.3 -45 46.7, at magnitude 8.4 in **Norma**; on the 20th – 16 47.3 -49 14.7, at

magnitude 8.4 in **Ara**; and on the 30th – 17 05.8 -52 51.7, at magnitude 8.4 in **Ara**.

Comet **C/2020 V2** (**ZTF**) – **V2's** positions, according to ***ALPO***, are as follows: On November 10th – 11 10.9 +63 39.5, at magnitude 10.4 in **Ursa Major**; on the 20th – 11 13.0 +67 56.1, at magnitude 10.1 in **Ursa Major**; and on the 30th – 11 08.3 +73 14.2, at magnitude 9.9 in **Draco**.

Comet **C/2022 E3** (**ZTF**), a morning comet – **E3's** positions, according to **ALPO**, are as follows: On November 10th – 15 49.8 +24 27.8, at magnitude 10.0 in **Serpens**; on the 20th – 15 50.7 +24 24.5, at magnitude 9.6 in **Serpens**; and on the 30th – 15 51.9 +24 47.1, at magnitude 9.1 in **Serpens**. **E3's** positions, ***by my estimates***, are as follows (all referenced to the star **Delta Coronae Borealis**): On November 1st – about 1.4° due south; on the 5th – about 1.6° due south; on the 10th – about 1.7° due south and a touch east; on the 15th – about 1.85° due south and a touch east; on the 20th – about 1.7° south and a little east; on the 25th – about 1.6° south-southeast; and on the 30th – about 1.45° south-southeast.

Meteor Showers **–** The following information is from the **American Meteor Society.** There are three **Major** (**Class I**) meteor showers active in November: The **Orionids** – active from September 22 through November 22, peaked on October 21st; the **Leonids** – active from November 3 through December 2, peaks on November 18th with a maximum zenith hourly rate (mzhr) of 15; and the **Geminids** – active from November 19 through December 24, peaks on December 14th with a mzhr of 120!

There are eight **Minor** (**Class II**) meteor showers active in November: The **Southern Taurids** – active from September 23 through November 12, peaked on October 18th; the **Epsilon Geminids** – active from September 27 through November 8, peaked on October 19th; the **Leonis Minorids** – active from October 13 through November 3, peaked on October 21st; the **Southern Taurids** – active from October 11 through December 8, peaks on November 5th with a mzhr of 5; the **Northern Taurids** – active from October 13 through December 2, peaks on November 12th with a mzhr of 5; the **November Orionids** – active from November 13 through December 12, peaks on November 30th with a mzhr of 3; the **Sigma Hydrids** – active from November 22 through January 4, peaks on December 7th; and the **Monocerotids** – active from November 23 through December 24, peaks on December 11th.

There is only one **Variable** (**Class III**) meteor shower active in November – the **Alpha Monocerotids**, active from November 23 through December 24, peaks on December 11th.

There are seventeen **Weak** (**Class IV**) meteor showers (all have a mzhr of <2) active in November: The **Tau Cancrids** – active from September 23 through November 27, peaks on November 22nd; The **Lambda Ursae Majorids** – active from October 18 through November 7, peaked on October 28th; the **Southern Lambda Draconids** – active from October 29 through November 8, peaks on November 4th; the **Chi Taurids** – active from October 24 through November 13, peaks on November 4th; the **Kappa Ursae Majorids** – active from October 28 through November 17, peaks on November 5th; the **Andromedids** – active from October 24 through December 2, peaks on November 6th; the **Omicron Eridanids** – active from October 23 through December 2, peaks on November 13th; the **November Sigma Ursae Majorids** – active from November 17 through December 2, peaks on November 24th; the **Theta Pyxidids** – active from November 28 through December 6, peaks on December 1st; the **Southern Chi Orionids** – active from November 14 through December 16, peaks on December 2nd; the **December Kappa Draconids** – active from November 29 through December 13, peaks on December 3rd; the **Psi Ursae Majorids** – active from November 29 through December 11, peaks on December 4th; the **December Phi Cassiopeiids** – active from November 28 through December 10, peaks on December 4th; the **December Rho Virginids** – active from November 29 through December 22, peaks on December 5th; the **December Chi Virginids** – active from November 26 through December 30, peaks on December 12th; the **Eta Hydrids** – active from November 26 through January 1, peaks on December 12th; and the **December Sigma Virginids** – active from November 26 through January 24, peaks on December 22nd.

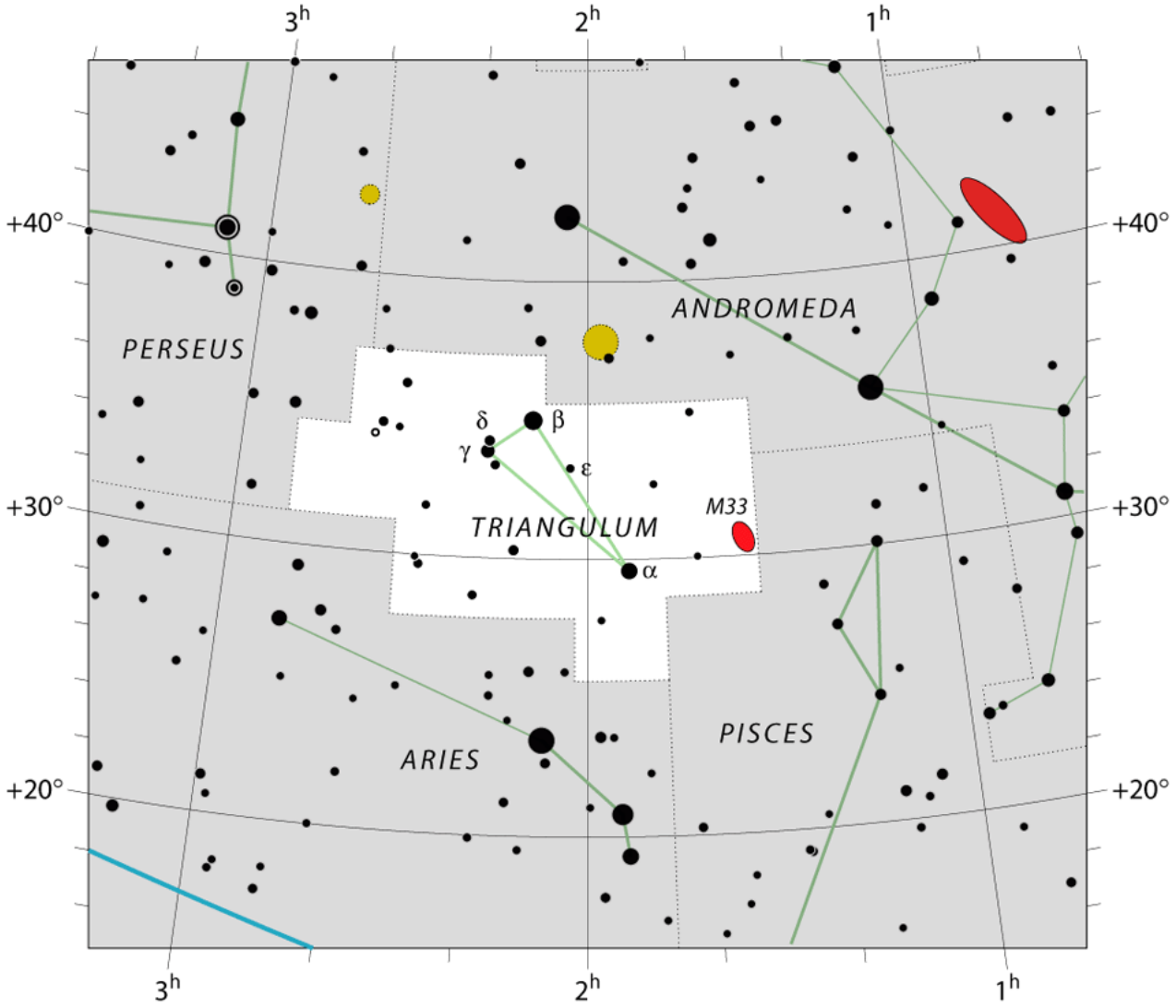
Mythology:

Triangulum – The Triangle

Since only three points make up the corners of a triangle, it is unsurprising, if unimaginative, to find a triangle among the constellations. Triangulum was known to the Greeks, who called it Deltoton, for its shape resembled a capital delta. Aratus described it as an isosceles triangle having two equal sides and a shorter third side. Eratosthenes said that it represented the Nile River delta. According to Hyginus, some people also saw it as the island of Sicily, which was originally known as Trinacria because of its three promontories. Trinacria was the home of Ceres, the goddess of agriculture. Triangulum contains M33, a galaxy in our local group, visible in binoculars.

A smaller triangle, Triangulum Minor, was introduced in 1687 by the Polish astronomer Johannes Hevelius from the three stars next to Triangulum. Triangulum Minor was shown on some maps but has since fallen into disuse.

The End



BRAS Survey for 2022

(This information will be used for club purposes only)

Last Name _____ First Name _____

Phone (Cell) _____ (H) _____ (W) _____

Best time to reach you _____

Email _____ Do you text? (circle one) Yes No

I. **Astro experience level** (circle one) 0-1 years 2-5 years 6 -10 years 10+ years

II. **What are your current astronomy-related interests?** Check all that apply.

Observing Interests	Other Interests
❑ Naked eye ❑ Binocular ❑ Telescopic ❑ Moon ❑ Planets ❑ Solar ❑ Meteors/Comets ❑ Deep Sky ❑ No special interest/general viewing	❑ Art/graphics and drawing ❑ Computers and Astronomy related programs ❑ Astrophotography/CCD imaging ❑ Radio Astronomy/shortwave ❑ Outreach/Sidewalk Astronomy (showing the sky to the public) ❑ Telescope Making ❑ Credentialling thru AL's stepped learning programs (earning badges and certificates) ❑ Introducing my kids to astronomy
Other _____	Other _____
What type of program(s) would you like to see presented at our monthly meetings?	

III. **I am interested in helping with:**

❑ Demonstrate Astronomical Equipment	❑ Light Pollution Committee
❑ Give a Club meeting Program	❑ HRPO events/Other Committees
❑ Public Observing Programs	❑ Coordinate refreshments at meetings
❑ Advertising/Public Relations/Articles	❑ Donate Items to the Club's Raffle Box

Other ways you can help: _____

What special skills or knowledge do you have (programming, newsletter, website, handyman, networking?_____

Please bring this to the next meeting, or drop it off at the Obervatory, or send to:
Baton Rouge Astronomical Society, c/o Trey Anding, Treasurer, P. O. Box 83162, Baton Rouge, LA 70884
Or scan and send a pdf to **president@brastro.org**