

Night Visions

October 2023

Newsletter of the Baton Rouge Astronomical Society

Osirus Rex - NASA's first asteroid sample has just arrived, in Utah! Photo credit and details on [Page 10](#)

Monthly Meeting October 9th 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: Amy Northrop, a NASA Solar System Ambassador,
will report on Nasa's Psyche Mission***

What's In This Issue?



President's Message
BRAS Meetings Calendar
Monthly Meeting Minutes
[Business Meeting Minutes](#)
Outreach Report
[Light Pollution Committee](#)
Globe At Night



[Osirus Rex - NASA's first asteroid sample has arrived.](#)

HRPO EVENTS

OBSERVING NOTES: [Norma – The Rule](#)

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

Elections: It is that time of the year again – nominations for the 2024 BRAS Officers. Positions are President, Vice-President, Secretary, and Treasurer (the Treasurer is the only semi-permanent officer). The new President will appoint the chairs of the Light Pollution Committee, Observing, Outreach, PIO, Newsletter Editor, and a “BRAS Closet” caretaker (who maintains the library, equipment that can be checked out, keep it straight and not overflowing, etc.). If you are interested in, or want to nominate for these positions, please let us know.

The BRAS webpage's basic information is being kept updated by my wife, Michele Fry (she is doing a great job), until BRAS can acquire a permanent webmaster.

The BRAS Member Handbook will be posted in the Members Only section of the BRAS Forums. If you are not a registered user of the forums, please let us know so you can access the Members Only section.

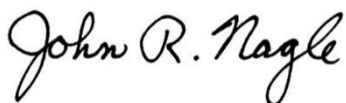
Donations Policy: BRAS is in the process of making an official policy for donations of all types (telescopes, equipment, financial, etc.). When the policy is finished, we will let you know.

Observing Clubs: Currently BRAS has only one, called **Moon Watchers**. We are in the process of finalizing two more – **Meteor Searcher** and **Constellation Finder**. All of the observing clubs contain about 40% of the corresponding AL programs, thus our observing clubs will give you a good start on the AL programs. If you have any ideas for more BRAS Observing Clubs, please let us know.

On-Line Streaming: Our streaming deck has been received, and the microphones, cameras, and a 4-port USB Hub have been ordered and are expected soon. This equipment will make the BRAS on-line streaming events easier – with the touch of one button, all the equipment and the projector will be connected to the internet for live streaming of the meetings and other events.

ALCon 2023 financials are closed, and the contract BRAS signed with AL is completed. The final report/article for the Reflector magazine has been sent in and will be in the next issue. AL has said they will have a special issue of their What's Up With The Astronomical League” in a few weeks that will have a lot of ALCon 2023 pictures in it.

Clear Skies,



John Nagle, President

P.S. Reminder. Our first STAR PARTY (replacing our old MOON nights), will be on November 10th. Mark your calendar! Bring you scope!

Calendar of Upcoming Meetings

Monthly Member Meeting – 7 pm Monday, October 9th at the Observatory, in person and via Jitsi

Light Pollution Committee: 6 p.m. before the Monthly meeting.

Monthly Business Meeting: 7 pm Thursday October 26th at the Observatory, in person and via Jitsi

BRAS Star Party, HRPO, November 10th, 7 til



Monthly Meeting Minutes – September 11th

- Welcome by the president, John Nagle.
- John introduced Amy Northrop as the speaker for the evening. The title for her topic was OSIRIS-REx which stands for Origin, Spectral Interpretation, Resource Identification, Security, Regolith Explorer. She gave an overview of this project that sent a probe to the asteroid, Bennu, to collect a sample that will be returned to earth within a week or so (the observatory will be open for this event). Amy is also scheduled to speak next month on the Psyche probe.
- There are three books available for raffle prizes this month.
- The light meter has been recalibrated and returned and is available for checkout to club members. Please see John for instructions if you are interested.
- Brad Schaefer did a webinar recently on the star T Coronae Borealis. John emailed Brad to see if he would be showing up in New Orleans in January for an event with AAS; as of right then there were no plans to attend, but he left the door open to make adjustments.
- There is a URL for our Facebook page.
- Michele is working on our website until we can find a web master. She is currently moving the links from the left side to the top of the home page.
- Someone at a basgriffioen website had some astronomy-related books for sale. John had a list of available books and information on the front table.
- John announced that the Starlink satellites were testing positive for radio wave leakage. This is not good news for astronomy; no solution was mentioned.
- Country Roads noted that LASM is open for free the first Sunday of the month from 1-5pm. This includes a free planetarium show now.
- The final report for ALCON is still being worked on. It should be done and sent off to the Astronomical League by the end of September. This will be published in the December Reflector.
- John had a sample solar camera in a can available on the front table for everyone to look at. This uses photographic paper and probably costs in the \$20-\$30 range if you are interested in purchasing one.
- John had some extra solar glasses available for pick up on the front table. He won these last year at the Texas Star Party.



Happy Halloween!

2023 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:

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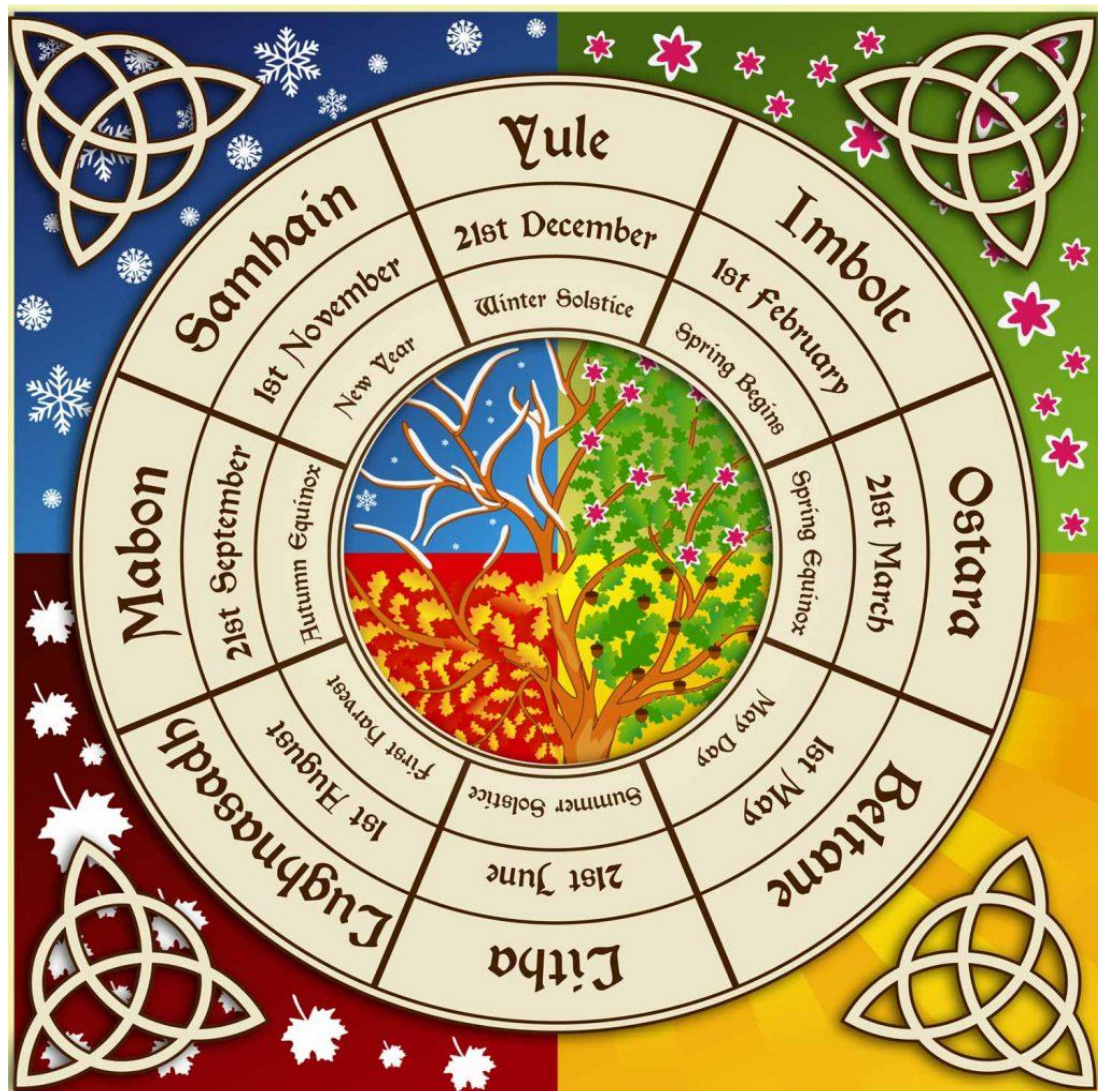
webmaster@brastro.org

Open

- There was some discussion about the upcoming eclipses.
- Scott L.'s attendance was acknowledged as he had been missing from the meetings until recently.
- Chris and Annette Raby are taking orders for light blue outreach T-shirts, long-sleeved and short-sleeved; these will be roughly \$15 apiece.
- Ben discussed outreach (this is covered elsewhere in the newsletter).
- Scott Cadwallader was recognized for receiving his award for completing the requirements for the Advanced Observer Certificate.
- Don made a motion to cancel live-streaming as we seem to have problems keeping it from crashing during the monthly meetings. After discussion everyone decided to leave things alone for now as we are working on updating our current equipment in the near future.
- The club will have exclusive use of the observatory for viewing and related activities on Saturday, September 16th, starting at 7pm (weather permitting).
- A raffle for three books was held with coffee and cookies available for onsite attendees.

Submitted by Roz Readinger, Secretary

Happy Mabon, everyone! Here's a decorative wheel of the year to remind you of the dates.





Business Meeting Minutes – September 28th

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

1. **Elections.** – We need the slate for the December elections by next month as we need to post this in the November newsletter. Don's name has come up for president; John will follow up with him. Ben's name has been put forward as vice president, and Scott C.'s name has been put out there for secretary. Steven would like all the candidates to generate bio's on themselves along with platform information so that club members will have a better idea of who they're electing and what the candidates propose to do if elected. Chris K. asked about voting in person and voting by proxy. There was a discussion about honorary members voting (we determined that Brad Schaefer is the only one that can do that). The position of custodian for the BRAS closet was discussed; this was determined to be an appointed position. Several other appointed positions will be available to be filled. Chris K. suggested that new members stand and introduce themselves in meetings.
2. **Drop-out cylinders.** – Since the original ones can't be found currently, Chris K. is going to start the purchasing process for new cylinders by obtaining new pricing quotes. He strongly suggests that BRAS generates a formal response to this issue. An OED meeting is scheduled for the beginning of October.
3. **Web Page.** – John asked if anyone had taken a look at our web page lately. There was a brief discussion about keeping only the free information from the old web page as well as keeping basic information out there on the new web page. Michele is still working on all the HTML for the links at the top of the new web page.
4. **Member's Handbook.** – This has been done for a while; there's been a version in Ben's box; John will follow up on this.
5. **Donation Policy.** – There was a discussion about drafting a policy for any and all donations. We will need to spell out what will be accepted by our club as well as what will be accepted and in turn donated to schools or others or possibly sold.
6. **BRAS Observing Club(s).** – We can now add a new local observing certificate for meteors as well as two new ones for constellations to the current moon certificate. There was a question about local star parties and whether our MOON Night qualifies as one. Someone asked about how to modify the current AL certificates for local observing. When Chris K. handles his modifications, he adjusts it down to about 40% of the original AL qualifications. The suggestion was made to work on earning these after club meetings. Later a motion was made by Trey to accept these new certificates; this was seconded by Steven. John thanked Chris K. for his contributions and support to this program.
7. **Electronics – camera, microphones, cables.** – Trey has ordered most of the equipment; it should be in by Sunday. He just remembered that he needed a second webcam. There were no cables ordered as Trey wanted to measure to make sure he was ordering the correct lengths. He did get a good deal on the microphones and the hub as the prices had gone down on those items. There was some discussion about moving equipment around. If this happens, Chris K. will need a written proposal about where the equipment will be placed.
8. **ALCon wrap-up/report.** – John had some information about the rosters of ALCON and the RASC handbook. There was also a request for volunteers for the 2025 ALCON at Bryce Canyon by the Utah club sponsoring that event. Our group is still working on corrections to our report for this year, but this should be done and away to AL by the end of the week. There was a snafu with the check, so Trey hand-delivered it to the hotel; he received an acknowledgement of the check today from the lady at the

hotel. Steven, John, etc. are going to get copies of the receipt from Trey. Steven announced that if anyone wanted anything off his SharePro site related to ALCON, to make sure and grab it before Friday as he needed the space for other things. There was a brief discussion on who should have the authority to sign checks for the club (besides Trey); the new president in the new year should have the authority. Steven made a motion that a shadowbox type frame for the ALCON 2023 program be created for Abigail who worked hard to create the programs; this was seconded by John. Carroll Iorg is on record as saying the books are closed on our ALCON. There was discussion about leftover details. Steven asked about bringing back the leftover T-shirts and bags to sell here; some research needs to be done as to quantity and cost. John announced there will be an ALCON presentation at the next BRAS meeting.

New Items

Someone asked about a speaker for the November BRAS meeting. Merrill originally had someone in mind; John is going to follow up with him on this.

Chris K. announced that Wally's scope out on the main floor of the observatory needed to be moved. Also there was a discussion about moving large telescopes in the BRAS closet. Scott C., John, and Trey got the 12-inch mounted on wheels and rearranged the closet to move in Wally's scope.

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

Submitted by Roz Readinger, Secretary



LPC (Light Pollution Committee) Report September

This committee meets at 6:00, same day as the 7:00 BRAS Member Meeting

Everyone is welcome to join in.

1. Project to send BRAS concerns to has been chosen. Drafting letter.
2. Planning Commission meeting – Chris says he will attend.
3. DOTD – Chris to go to their office.
4. Templates for You-Tube videos on LP have been loaded onto the BRAS computer.
5. The first BREC park outreach (solar) will be at the Highland Road Park (across the street from HRPO).
6. The light meter has been calibrated and returned. It can be checked out, and we can train you in the use of it.
7. LSU Campus Lighting Project – Phase 1 completed, Phase 2 almost completed, and Phase 3 has been started.

John Nagle, LPC Chair Pro-Tem



Outreach Report for September 2023

Hi Everyone,

We are back in full swing after a slow, super hot Summer, with two great outreach events over the last few weeks. One was an excellent outing to the Port Hudson Historic Site for their School Days event and the other was our return to Sidewalk Astronomy at Perkins Rowe.

We had over 200 students at Port Hudson and were fortunate to have clear sky. The kids were able to see the Sun through white light filtered AND Hydrogen Alpha telescopes and even got some views of Venus. We also had two scale models of the Solar System set up (one for size and one for distance), our Moon banner with 3 printed craters and finally, the gravity well demonstration. A big thank you to Scott C., Chris and Annette R., Susan M. and Ben T. for showing up to make it a successful event!



Chris and Scott were popular attractions with their solar observing on a hot day out at Port Hudson



Annette showing off the scale distance solar system model to the students. (Ben in the background with the gravity well demo.)

around that time Saturn popped up above the opposite buildings. Scott C. also had a great EAA (electronically assisted astronomy) rig going with a nice astro-video camera displaying on a tablet. With it, people were able to see a couple of cool nebulae that would otherwise have been invisible. Thanks to Scott C., Coy W., John N., Roz R., Chris R., Don W. and Ben T. for showing up to help out. We're sure to have larger crowds as we get settled back in for the Fall.

Sidewalk Astronomy was a little lightly attended. We figured the heat fatigue and the return to school is still keeping people home right now. The whole of Perkins Rowe was pretty slow. That being said, we saw about 40-50 people or more and they were thrilled to see what we could show them. We had a beautiful Moon until about 8:15pm when it was obscured by buildings, but right



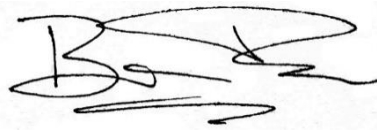
Ben talking to students about gravity using the homemade gravity well demo

We've got some great events coming up soon so please take a look at the list below and let me know if you can help out. (Especially if you can help out this coming Saturday, October 7th or on Saturday, October 21st. Those are both long days so we need plenty of help so nobody has to be there the whole time.)

As I always say, these outreach events are a fun time, even if they are a lot of work. I've probably learned more about astronomy just by participating in outreach than I have anywhere else. You don't have to have any experience. We'll be there to show you what to do! I hope to hear from you!!

Clear Skies,

Ben Toman



Upcoming Outreach Events

Saturday, October 7th

10am-5pm

Baton Rouge Mini Maker Faire at the Main Library (Goodwood)

Several people needed to take shifts to cover the day
Demos, club info, solar observing

Thursday, October 19th

8pm-? (Telescope observing time!)

Sidewalk Astronomy at Ascension Parish Library

Gonzales Branch

Telescope viewing

Friday, October 20th

7:30pm-? (Telescope observing time!)

Sidewalk Astronomy at the Lucher Library

Telescope viewing

Friday, October 20th

6pm-8pm

West Baton Rouge Museum Halloween Event

Primary: Telescope viewing

Secondary: Demos/exhibits

3 or more people needed

Saturday, October 21st

11am-4pm

Livingston Library 8th Annual Book Festival

Solar viewing, demo/info table

(At least 2 person shifts. You do not need to stay for the entire event.)

Tuesday, October 24th

Sidewalk Astronomy at Perkins Rowe

6pm-9pm



Susan talks with students about the scale size of our solar system using the Night Sky Network model.



Scott and Coy showing some Perkins Rowe patrons the Moon. Don, Roz and John are chatting on the other side of the fountain.

Globe At Night

This month's target for the Globe At Night program is
Cygnus and Pegasus from October 4th through October 13th

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.

SPACE WEATHER ALERTS

Instant solar flare alerts: The sun is starting to flare again.

Sign up for [Space Weather Alerts](#) to receive text messages when explosions are underway.

Basic plan \$49.95/year

Alerts include: Coronal Mass Ejections (CME), Geomagnetic Storms Predicted (class G1-G4), Planetary K-index (K5-K9, K4 for Pro Plan), Solar Flare alerts (X-Ray Flux levels and Scales), Solar wind speed alerts (500, 600, 700 and over 800 km/s), B Sub Z South-pointing episodes, Cracks in Earth's magnetic field.

• 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. To 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 or Justin: <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

NASA's First Asteroid Sample Has Landed, Now Secure in Clean Room – Osiris Rex



Summary (Click title to read the full article):

The sample return capsule from NASA's OSIRIS-REx mission is seen shortly after touching down in the desert, Sunday, Sept. 24, 2023, at the Department of Defense's Utah Test and Training Range. The sample was collected from the asteroid Bennu in October 2020 by NASA's OSIRIS-REx spacecraft. **Credits: NASA/Keegan Barber**

After years of anticipation and hard work by NASA's OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification and Security – Regolith Explorer) team, a capsule of rocks and dust collected from asteroid Bennu finally is on Earth.

Getting the sample under a "nitrogen purge," as scientists call it, was one of the OSIRIS-REx team's most critical tasks.

The returned samples will help scientists worldwide make discoveries to better understand planet formation and the origin of organics and water that led to life on Earth, as well as benefit all of humanity by learning more about potentially hazardous asteroids.

The Bennu sample – an estimated 8.8 ounces, or 250 grams – has been transported to NASA's Johnson Space Center in Houston, to be disassembled, to extract and weigh the sample, create an



inventory of the rocks and dust, and, over time, distribute pieces of Bennu to scientists worldwide.

We now have the unprecedented opportunity to analyze these samples and delve deeper into the secrets of our solar system.

The Osiris-Rex spacecraft traveled billions of miles to Bennu and back, releasing its sample capsule toward Earth's atmosphere when it was 63,000 miles (102,000 kilometers) from Earth's surface.

Read more articles here:

[Recovery Team Waiting for OSIRIS-REx Sample Capsule Near Landing Zone](#)

[NASA's OSIRIS-REx Capsule Arrives in Houston](#)





Messages from HRPO

Highland Road Park Observatory



FRIDAY NIGHT LECTURE SERIES

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

6 October = "Apollo 7 55th Anniversary"

Donn Eisele, Wally Schirra and Walter Cunningham demonstrated the ability of the command and service module—paving the way for our trips to the Moon that eventually led to the landings. Former BREC Center Supervisor Tom Northrop narrates this historic success!

13 October = "Wonders of the Fall Sky" BREC Education Curator Amy Northrop will take the audience on a fascinating tour of Baton Rouge's autumn season. She'll highlight the celestial gems that will sparkle throughout the next three months—gems visitors will be able to see live if they continue to visit HRPO!

20 October = "The Spooky Sampler" We're getting close to Halloween...this lecture slot will be used to highlight a smorgasbord of unsettling stories, images and theories—for our adult audience.



EVENING SKY VIEWING

No admission fee. For ages six and older.

Fridays (6, 13 and 20 October) from 8:30pm to 10pm

Saturdays (7, 14 and 21 October) 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)
walk-ins welcome, but advanced registration via [WebTrac](#) strongly recommended
[activity #531990] * parents may stay with or leave Cadet

Four Cadet minimum and sixteen Cadets maximum per session.

7 October = "The Spooky Session"



PARTIAL SOLAR ECLIPSE

Saturday 14 October from 9am to 2pm
for ages six and older / no admission fee

A wonderful display of Earth-Moon-Sun geometry occurs on this day. Several telescopes will be set up and participants should be able to detect contact between the Sun and the Moon at about 10:33am CDT, when the Sun is sixteen degrees up. Maximum coverage will occur at about 12:05pm CDT, when the Sun is fifty degrees up. **WARNING:** Do not ever attempt a viewing of the Sun for the first time, unless you are with someone with experience.



SOLAR VIEWING

Saturday 21 October from 12pm to 2pm
for ages six and older / no admission fee

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.



STEM EXPANSION: “Spooky STEM”

Saturday 21 October 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.



16TH ANNUAL SPOOKY SPECTRUM

Saturday 28 October from 6pm to 10pm
for ages six and older / no admission fee

Come visit on this moonless night—if you dare—as HRPO delves into the eerie side of astronomy, physics and aeronautics *for the sixteenth consecutive year*. We'll have creepy science demonstrations, some of which we've never used. And don't forget the stories. Strange sky phenomena...extra dimensions... extraterrestrials. Be warned—we want to make you think!
experience.



OBSERVING NOTES **OCTOBER 2023**

Norma – The Rule

Position: RA 16 03, Dec. -52 00°

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, 2022. Beginning with last May, Named Stars, Deep Sky and Other Stars are expanded to include new discoveries, and updated when more accurate information is available. Monthly updates will be made to Sky Happenings and all that appears below that title.

Named Stars

There are no named stars in the Norma Constellation.

Deep Sky:

NGC 6087, S. Norma Cluster, mag. 5.4, 16 18 50.60 -57 56 05.0, 29.5'x29.5' in size, is an open cluster of 40+ stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 7.9; bright, large. Located 3.8° south-southeast of **NGC 6067**. Also known as **Caldwell 89, ESO 137-015, C1614-577, vdBH 188, OCl 448, OCl 448.0, Cr 300, Lund 693, Mel 141, Raab 110, and Dunlop 326.**

NGC 6067, mag. 5.6, 16 13 11.0 -54 13 08.0, 13.4'x13.4' in size, is an open cluster of 100+ stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 8.3; very bright and very large. Located 25' north of **Kappa Normae**, or 4.2° south-southwest of **Gamma Normae**. Also known as **ESO 178-012, C1609-540, Mel 140, vdBH 186, OCl 953, Raab 109, Cr 298, Lund 696, Dunlop 360, and [FSR 2017] 1717.**

NGC 6169, Mu Normae Cluster, mag. 6.6, 16 34 04.60 -44 02 44.0, 12'x12' in size, is an open cluster of about 40 stars; detached, no concentration of stars; small brightness range. All marked in error, not an object. Also known as **ESO 276-005, C1630-439, OCl 984, Cr 306, Lund 707, and Mrk 29.**

NGC 6167, mag. 6.7, 16 34 35.0 -49 46 19.0, 7'x7' in size, is an open cluster of 200+ stars; detached, weak concentration of stars, large range in brightness, magnitude of brightest star (**HD 14919**) is 7.4; large and moderately rich. Located 2.4° north-northeast of **Gamma Normae**. Also known as **vdBH 192, ESO 226-016, C1630-495, OCl 971, Cr 305, Harvard 11, Lund 708, Dunlop 400, h 3635, and Bennett 79a.**

NGC 6164, mag. 6.71, 16 33 41.84 -46 04 48.2, 1.0'x0.3' in size, is an emission nebula paired with **NGC 6165**. Also known as **ESO 226-012, AM 1630-475, HD 148937, CD-47 10855, Ced 135a, Ced 135b, ESO 226-013, Gum 52, Hen2-168, HIP 81100, PK 336-00.1, VV' 142, ARO 557, RCW 107, SAO 226891, WDS J16339-4807 A/Aa/Ab, WRAY 19-46, NGC 6165, and AAVSO 1626-47.**

NGC 6165, mag. 6.71, 16 34 03.45 -48 09 01.8, 2.5'x0.5' in size, is an emission nebula paired with **NGC 6164** with each nebula forming a lobe. The star **HD 148937** (magnitude 6.8) is at the center of the two lobes, with **HD 148988** (magnitude 9.0) located only 3' to the northeast. **NGC 6164** is the northwest lobe, and **NGC 6165** is the southeast lobe. Also known as **ESO 226-014 and C226-014.** Paired with **NGC 6164.**

Cr 299, mag. 6.9, 16 19 26.2 -54 57 25.0, 42.5'x42.5' in size, is an open cluster of about 30 stars; detached, no concentration of stars; moderate range in brightness; poor cluster. Also known as **ESO 179-001, ESO 179-002, C1615-548, C1614-550, Harvard 10, OCl 952, OCl 952.0, OCl 954, and Lund 695.**

NGC 6134, mag. 7.2, 16 27 46.5 -49 09 04.0, 6'x6' in size, is an open cluster of 120+ stars; detached, weak concentration of stars; large range in brightness; magnitude of brightest star is 9.3, quite large. Also known as **ESO 226-009, C1624-490, Cr 303, Mel 146, vdBH 191, Lund 703, Raab 112, OCl 968, Bennett 76, and Dunlop 412.**

Cr 292, mag. 7.9, 15 49 38.4 -57 35 38.0, 11.4'x11.4' in size, is an open cluster of about 50 stars; detached, no concentration of stars; moderate range in brightness. Also known as **C1546-575, Lund 679, and OCl 943.**

Ru 114, mag. 8.0, 16 06 31.0 -56 52 30.0, 15'x15' in size, is an open cluster of about 50 stars. Also known as **C1602-567, Lund 686, and OCl 947.**

NGC 6152, mag. 8.1, 16 32 45.6 -54 31 44.0, 18'x18' in size, is an open cluster of about 70 stars; detached, weak concentration of stars; moderate range in brightness; magnitude of brightest star is about 11.0 photo; large. Also known as **ESO 179-009, C1628-525, OCl 961, OCl 961.0, Cr 304, and Lund 706.**

NGC 5925, mag. 8.4, 15 27 26.8 -54 31 44.0, 22.8'x22.8' in size, is an open cluster of about 120 stars; detached, no concentration of stars; small range in brightness; very large. Also known as **Lund 675, ESO 177-006, C1523-543, vdBH 172, IRAS 15236-5421, Cr 291, and OCl 938.**

NGC 5946, mag. 8.4, 15 35 28.57 -50 39 35.0, 7.1'x7.1' in size, is a globular cluster with a low concentration of stars; moderate range in brightness; pretty large, round, and very well resolved. Also known as **ESO 224-007, LEDA 2802657, C1531-504, vdBH 175, GCl 36, EQ1531-504, Mel 135, and IC 4550.**

NGC 6031, mag. 8.5, 16 07 35.4 -54 00 54.0, 3.0'x3.0' in size, is an open cluster of 120+ stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 10.9. Located 50' west of **NGC 6067**. Also known as **ESO 178-009, C1603-539, Cr 297, vdBH 183, IRAS 16039-5355, OCl 951, Lund 687, and Dunlop 359.**

Ru 119, mag. 8.8, 16 28 09.3 -51 31 07.0, 8'x8' in size, is an open cluster. Also known as **Lund 704, OCl 963, and C1624-514.**

NGC 5999, mag. 9.0, 15 52 08.6 -56 28 22.0, 17.3'x17.3' in size, is an open cluster of 100+ stars. Located 2° northwest of **Iota Normae**. Also known as **ESO 178-001, C1548-563, Mel 137, vdBH 178, [FSR 2017] 1706, Dunlop 343, Cr 293, Lund 680, OCl 946, Raab 106, and Bennett 71.**

Cr 307, mag. 9.2, 16 35 10.3 -50 59 24.0, 7.6'x7.6' in size, is an open cluster of about 20 stars. Also known as **C1631-508, vdBH 193, and OCl 965.**

PN G331.7-01.0, "The Ant Nebula", mag. 9.2, 16 17 12.0 -51 59 00.0, 25" diameter, is a planetary nebula with the central star at magnitude 17.6. Also known as "**Chamber of Horror Nebula**," **Mz 3, and PK 331-01.1.**

ESO 137-034, mag. 9.36, 16 35 14.11 -58 04 48.1. Also known as **ESO 163101-5758.5, PGC 58547, IRAS 16309-5758, SGC 163101-5758.5, and LEDA 58547.**

Lynga 6, mag. 9.5, 16 04 52.3 -51 57 36.0, 5.0'x5.0' in size, central star is **HD 143795**. It is an arc of seven stars. Also known as **C1601-517, vdBH 182, Lund 685, and OCl 935.**

NGC 6115, mag. 9.8, 16 24 26.4 -51 56 54.0. Also known as **ESO 226-007, C1620-518, Ru 118, Lund 700, and OCl 960.**

Objects of interest beyond magnitude 10:

Sp 1, "Fine Ring Nebula", "Shapley's Ring", mag. 12.6, 15 47 14.0 -51 31 28.0, 1.3'x1.3' in size, is a planetary nebula with a white dwarf star (magnitude 14.03) at its center. Also known as **Sa2-127, PK 329+02.1, PN G329.0+01.9, ESO 225-002, Hen2-137, IRAS 15479-5122, ARO 518, VV 75, VV' 127, and RCW 100.**

Abell 3627, "Norma Cluster of Galaxies", 16 14 22.5 -60 52 07.0, redshift of 0.016. Also known as **AM 1610-604.**

Dunlop 362, “Norma Star Cloud”, 16 21 00.0 -53 07 00.0.

Objects in Norma: 14 NGC; 44 PK; 14 Dunlop; 66 ESO; 7 Sa; 37 PN G; 8 Ru; 7 Lynga; 14 Cr; 2 Teu; 1 Caldwell; 36 Hen2; 2 Hen3; 7 RCW; 5 Pe; 3 Slo; 1 IC; 31 WRAY; 15 Sa2; 3 Sa3; 6 SDC; 1 Globular; 12 C(lusters); 19 vdBH; 3 LEDA; 6 Mel; 4 FSR; 9 OCl; 3 ARO; 1 PC; 3 Mz; 2 SL; 5 Lo; 3 Gum; 1 Cannon; 2 Pismis; 1 Shapley; 1 Johansson; 1 Al; 1 Tr; 1 Moffat; 1 Abell; 2 Harvard; 1 Hogg; 1 MnWe; 1 SaSt; 4 StWr; 1 KoRe; 1 Al J; 1 Kro; 5 Bennett; 27 IRAS; 2 VV; 5 VV'; 1 GCl; 2 AM 2 Ced; 3 SGC; and 2 HH for a total of 454.

Other Stars:

HD 148937, mag. 6.71, 16 33 52.39 -48 06 40.5, is a spectroscopic binary star misclassified as a planetary nebula. Also known as **HIP 81180**, **CD-47 10855**, **SAO 226891**, **WDS J16339-4807 Aa, Ab**, **AAVSO 1626-47**, **Ced 135a**, **Ced 135b**, **Wray 19-46**, **GSC 08329-03343**, **ESO 226-013**, **ARO 557**, **NGC 6164**, **NGC 6165**, **VV' 142**, **PK 336-00.1**, and **RCW 107**.

HD 142415, mag. 7.34, 15 57 40.79 -60 12 00.9, is a yellow main sequence star that has one planet in orbit (1.62 **Jupiter**) with an orbital period of 386.3 days. Also known as **HIP 78169**, **SAO 253358**, and **GSC 09023-00815**.

HD 148156, mag. 7.71, 16 28 17.28 -46 19 03.4, is a yellow main sequence star with one planet in orbit (85% **Jupiter**) with an orbital period of 1,027 days. Also known as **HIP 80680**, **CD-46 10768**, **SAO 226791**, and **GSC 08312-03251**.

IM Normae, mag. 8.5, 15 39 26.46 -52 19 18.0, is an eclipsing binary and a recurrent nova star. Also known as **Nova Nor 1920** and **AAVSO 1532-52**.

HD 143361, mag. 9.16, 16 01 50.35 -44 26 04.3, is a yellow main sequence high proper motion binary star, with a red companion at a separation of 30.9 au, that has one planet in orbit (3.12 **Jupiter**) with an orbital period of 1,057 days. Also known as **HIP 78521**, **CD-44 10569**, **GSC 07863-01386**, and **SAO 226454**.

HD 330075, mag. 9.36, 15 49 37.69 -49 57 48.7, is a yellow dwarf star with one planet in orbit (0.76 **Jupiter**) with an orbital period of 3.369 days. Also known as **HIP 77517**, **CD-49 10033**, and **SAO 226248**.

Stars of interest beyond magnitude 10:

HD 330036, mag. 10.81, 15 51 15.93 -48 44 58.4, is an emission-line star that is misclassified as a planetary nebula. Also known as **HIP 77662**, **CD-48 10371**, **GSC 0831 3-01995**, **WDS J15513-4845AB**, **AAVSO 1544-48**, **IRAS 15476-4836**, **ESO 225-001**, **Hen3-1107**, **PK 330+04.1**, **Cn 1-1**, **PN G330.7+04.1**, and **Wray 15-1364**.

Hen2-147 (V347 Normae), mag. 16.0, 16 14 01.10 -56 59 28.0, is a symbiotic Mira variable star misclassified as a planetary nebula. Also known as **ESO 178-013**, **PK 327-04.1**, **PN G327.9-04.3**, **Wray 16-208**, and **IRAS 16099-5651**.

XTE J1550-564 (V381 Normae), mag. 16.6, 15 50 58.78 -56 28 35.0, is an orange high-mass X-ray binary star and a nova star. There is a black hole (10x solar mass) that is a micro-quasar.

1E161348-5055, 16 17.5 -51 02, is an unusual neutron star (pulsar) in **RCW 103**. It is a periodic X-ray source, about 2,000 years old, with a period of 6.67 hours. Also known as **AJG 44**, **PKS 1613-50**, **RCW 103**, and **SNR G332.4-00.4**.

SGR J1550-5418, 15 50 54.11 -54 18 23.7, is a magnetar star emitting gamma-ray flares (a soft gamma repeater). It has a rotational period of about 2.07 seconds – the fastest yet observed for a magnetar.

4U 1538-52 (QV Normae), 15 42 23.36 -52 23 09.6, is an X-ray pulsar star. Also known as **Nor X-2**.

4U 1608-52 (QX Normae), 16 12 43.0 -52 25 23, is an X-ray burster and a binary star. Also known as **1ES 1609-5212**.

4U 1624-490, 16 28 02.83 -49 11 54.6, is a low-mass X-ray binary star. Also known as “**Big Dipper**” and **GSC 08320-02046**.

4U 1630-47, 16 34 01.61 -47 23 34.8, is a low-mass X-ray binary star. Also known as **Nor X-1**.

Stars in Norma: 12 Alpha; 26 Lettered; 8 h; 6Δ (Dunlop); 29 V; 2 Rss; 11 I; 2 Rst; 1 Ø; 3λ (See); 2 CorO; 1 Hld; 1 B; 1 Number; and 1 RST for a total of 106.

Sky Happenings: October 2023 (what follows pertains **ONLY** to the current month. Material above is good year after year.)

- Oct. 1st -** Asteroid **Pallas** is in conjunction with the **Sun** at 11 AM CDT,
Evening: In the east-northeast the waning **Moon** will rise 2° to the upper left of **Jupiter**,
The **Moon** passes 3° north of **Jupiter** at 10 PM CDT.
- Oct. 2nd -** Asteroid **Amphitrite** is at opposition at 2 AM CDT,
The **Moon** passes 3° north of **Uranus** at 12 Noon CDT,
Evening: The **Moon** and the **Pleiades (M49)**, about 1.5° apart, will rise above the east-northeast horizon.
- Oct. 3rd -** The **Moon** is 1.1° south of the **Pleiades (M45)** at 12 AM (midnight) CDT.
- Oct. 6th -** **Last Quarter Moon** occurs at 8:48 AM CDT.
- Oct. 7th -** Morning: High in the east the waning crescent **Moon**, in **Gemini**, is about 1.5° to the lower right of **Castor**, with **Pollux** above them.
Pollux is 1.4° north of the **Moon** at 6 AM CDT.
- Oct. 8th -** Morning: The **Moon**, in **Cancer**, is 3.5° to the upper left of the **Beehive Cluster (M44)**.
- Oct. 9th -** Dawn: **Venus** is less than 2.5° to the lower right of **Regulus**,
The **Moon** is at apogee (251,920 miles or 405,425 km from **Earth**) at 10:42 PM CDT.
- Oct. 10th -** **Venus** passes 2° south of **Regulus** at 12 AM CDT (midnight),
The **Moon** passes 6° north of **Venus** at 1 AM CDT,
Dawn: The **Moon**, in **Leo**, will form a line with **Venus** and **Regulus** before the **Sun** rises,
Pluto is stationary at 7 PM CDT.
- Oct. 14th -** **New Moon** occurs at 12:55 PM CDT (lunation 1247) – an annular solar eclipse will be visible along a narrow path from the northwest of the **United States** through **Texas** and beyond. Most of the rest of **North America** will see a partial eclipse.
- Oct. 15th -** **Mars** is 1° north of the **Moon** at 11 AM CDT.
- Oct. 18th -** The **Moon** passes 0.8° north of **Antares** at 9 AM CDT.
- Oct. 20th -** Double shadow transit on **Jupiter** starts at 12:57 AM CDT,
Mercury is in superior conjunction at 1 AM CDT.
- Oct. 21st -** **Orionid** meteor shower peaks at 7PM CDT,
First Quarter Moon occurs at 10:29 PM CDT.
- Oct. 23rd -** Evening: The waxing gibbous **Moon** will hang 3° below **Saturn** in the south-southwest,
Venus is at greatest western elongation (46°) at 6 PM CDT.
- Oct. 24th -** The **Moon** passes 3° south of **Saturn** at 3 AM CDT.
- Oct. 25th -** The **Moon** passes 1.5° south of **Neptune** at 8 PM CDT,
The **Moon** is at perigee (226,721 miles or 364,872 km from **Earth**) at 10:02 PM CDT.
- Oct. 28th -** **Full Moon** occurs at 3:24 PM CDT – a partial lunar eclipse will be visible in northeastern **North America** and much of **South America**,
Evening: **Jupiter** is just over 2.5° below the **Full Moon**.
- Oct. 29th -** The **Moon** passes 3° north of **Jupiter** at 1 AM CDT,
The **Moon** passes 3° north of **Uranus** at 9 PM CDT.
- Oct. 30th -** The **Moon** is 1.1° south of the **Pleiades (M45)** at 10 AM CDT.
- Nov. 2nd -** Evening: In the east-northeast the waning gibbous **Moon** will rise in **Gemini** alongside **Castor** and **Pollux**. The trio will form a triangle, with the *Moon* a bit less than 6° to the right of the stars,
Asteroid **Vesta** is stationary at 11 PM CDT.
- Nov. 3rd -** **Jupiter** is at opposition at 12 AM CDT (midnight),
Pollux is 1.4° north of the **Moon** at 2 PM CDT.
- Nov. 4th -** **Saturn** is stationary at 12 Noon CDT.

Nov. 5th - **DAYLIGHT SAVINGS TIME** ends at 2 AM,
Last Quarter Moon occurs at 3 :37 AM CST.

Planets:

Mercury – Mercury will make a brief morning appearance, at magnitude -1.1, early in October, with its elongation from the **Sun** decreasing very quickly. On the 1st, the planet will stand 4° high in the east 50 minutes before sunrise. By the 4th, the planet will be only 2° high before sunrise. The planet will reach conjunction with the **Sun** on the 20th and will return to the evening sky later next month.

Venus – Venus, a brilliant morning star, starts the month 7° west of **Regulus** at magnitude -4.7. The planet rises in the eastern sky around 3:30 AM local time. By October 10th, the planet is at magnitude -4.6 and will stand 2.5° south of **Regulus** at about 5.5° from the **Moon**. The planet will traverse southern **Leo** and on the 31st will stand 6° northwest of **Beta Virginis**. The planet will reach greatest western elongation (46°) on the 23rd, with the planet 50% illuminated. Through a telescope, the planet's disk is a 32"-wide, 37% illuminated crescent on the 1st. The disk will shrink to 22" by the 31st and will be 54% illuminated.

Mars – Mars is too close to the Sun for observation this month.

Jupiter – Jupiter is one month from opposition. As October opens, the planet will rise just after 8 PM local time and by month's end its span will be 49" at magnitude -2.9, its most brilliance for the year. The planet, in southern **Aries**, will lie about 3° south of the waning gibbous **Moon** on the 1st. The planet will rise in the east-northeast in the evening with the **Moon** rising 10 minutes before the planet. On the 28th, the **Moon**, only hours after being full, will rise in the deepening twilight about 20 minutes before the planet, with a separation of about 3.5°. On the 5th, there is a transit of **Io's** shadow beginning at 8:50 PM CDT just as **Ganymede** is skimming the planet's south pole. **Io** will start transit shortly after 9:30 PM CDT. **Io's** shadow will leave the disk at 11 PM CDT and **Io** will exit transit at 11:41 PM CDT. On the 28th, **Io's** shadow (in transit of the planet) will lead the moon by only 9 minutes, starting at 9:02 PM CDT. **Ganymede** will transit the planet on the 12th, starting at 8:56 PM CDT, with its shadow crossing the planet's southern polar region. **Io's** shadow will appear at 10:44 PM CDT, just as **Ganymede's** shadow is leaving the southwest limb. **Io's** transit will start at 11:18 PM CDT, followed 20 minutes later by **Ganymede**. **Europa** transits the planet on the evenings of the 2nd/3rd, 9th/10th, 16th/17th, and early on the 24th. Each event will start progressively later in the night or early morning. **Callisto** passes north, or south of the planet this month. On the 20th, there is a double shadow transit and a double transit of the planet. **Io's** shadow will start transit at about 12:38 AM CDT, with **Ganymede's** shadow starting transit 19 minutes later at 12:57 AM CDT. **Io** will start transit at 1:01 AM CDT. **Ganymede's** shadow will egress transit at 2:41 AM CDT, with **Io's** shadow egressing at 2:49 AM CDT. **Ganymede** will ingress transit at 2:53 AM CDT. **Io** will egress at 3:10 AM CDT, followed by **Ganymede's** egress at 3:42 AM CDT.

Saturn – Saturn starts October at magnitude 0.5 and will lose 0.1 magnitude during the month. The planet is in southwest **Aquarius**, standing high in the south well before midnight. The planet sets by 4 AM on the 1st, and two hours earlier on Halloween. The planet can be found 5° northeast of the waxing gibbous **Moon** overnight on the 23rd/24th. Through a telescope, the planet's disk is 18" while the ring system spans 41". The current ring tilt to our line-of-sight is 10°.

Titan, the planet's brightest moon, is at magnitude 8.5. **Titan** is north of the planet on the 9th/10th, and south on the 1st/2nd and 17th/18th. **Tethys** will transit the planet's disk twice this month – on the 15th/16th and the 16th/17th. It will start transit shortly after midnight on the 16th, taking 20 minutes to cross the disk. On the 17th, it will start transit around 9:20 PM CDT with about 70 minutes of transit time. All times given are approximate – begin observing 15 to 20 minutes early. **Enceladus**, at 12th magnitude, is close to the edge of the disk. **Iapetus**, at 16th magnitude, is less than 1' east of the planet on the morning of the 1st, lying between **Titan** and **Dione**. There is a 10th magnitude field star just 15" from **Iapetus**.

Uranus – Uranus stands about 9° southwest of the **Pleiades (M45)** and 9° northeast of **Jupiter**. The planet is just over 3° south of **Tau Arietis**, at magnitude 5.7, with a bluish hue. The planet will move westward toward next month's opposition. By month's end, the planet is just 4" wide in a telescope. Early on the 29th, the planet is about 2° south of the **Moon**.

Neptune – Neptune, in **Pisces**, is visible all night beyond naked-eye limits, and will require binoculars or a telescope to observe it. At magnitude 7.7, one must use guide stars – **20 Piscium** (at magnitude 5.5) is the

westernmost in a line of three stars (all of similar brightness) south of the **Circle of Pisces**. The planet will stand 33' west of **20 Piscium** on October 1st and will move westward. On the 15th, the planet is just 6' north of a magnitude 7.3 star. Through a telescope, the planet will span 2" and will glow bluish.

Asteroids / Minor Planets All positions given are from the *RASC Observer's Handbook, 2023 USA Edition* unless otherwise stated.

Asteroid **4 Vesta** – **Vesta's** positions are as follows: On October 3rd – 06 17.07 +19 02.1, at magnitude 7.9 in **Orion**; on the 13th – 06 23.96 +19 00.2, at magnitude 7.8 in **Orion**; and on the 23rd – 06 28.46 +19 00.1, at magnitude 7.6 in **Orion**.

Asteroid **8 Flora** – **Flora's** positions are as follows: On October 3rd – 22 08.24 -20 49.5, at magnitude 9.0 in **Aquarius**; on the 13th – 22 08.00 m-20 32.0, at magnitude 9.2 in **Aquarius**; and on the 23rd – 22 11.37 -19 59.9, at magnitude 9.4 in **Aquarius**. **Flora's** positions, *by my estimates*, are as follows: On October 1st – about 1.3° due west and a touch north of the star **41 Aquarii**; on the 10th – about 1.5° due west and a bit north of **41 Aquarii**; on the 15th – about 1.35° northwest of **41 Aquarii**; on the 20th – about 1.2° northwest of **41 Aquarii**; on the 25th – about 1.3° due north and a touch west of **41 Aquarii**; and on the 30th – about 2° due north and a bit east of **41 Aquarii**.

Asteroid **9 Metis** – **Metis's** position on October 23rd is 06 23.69 +23 25.8, at magnitude 9.9 in **Auriga**.

Asteroid **18 Melpomene** – **Melpomene's** positions are as follows: On October 3rd – 03 23.42 +01 15.1, at magnitude 8.6 in **Cetus**; on the 13th – 03 22.47 -00 33.9, at magnitude 8.4 in **Cetus**; and on the 23rd – 03 17.9 -02 17.6, at magnitude 8.2 in **Cetus**.

Asteroid **29 Amphirite** – **Amphirite's** positions are as follows: On October 3rd – 00 27.08 +05 20.8, at magnitude 8.7 in **Pisces**; on the 13th – 00 17.80 +04 49.7, at magnitude 9.0 in **Pisces**; and on the 23rd – 00 09.81 +04 22.3, at magnitude 9.2 in **Pisces**.

Comets – All positions given are *by my estimates*:

Comet **2P/Encke** – **Encke's** positions are as follows: On October 1st – about 1° due south and a touch west of **Gamma Leonis**; on the 5th – about 2° due north and a bit east of **M105**; on the 10th – about 2.5° north-northeast of **Omega Leonis**; on the 15th about 3.5° due east and a bit north of **Beta Virginis**; and on the 20th – about 2.5° due north and a touch west of **Gamma Virginis**.

Comet **103P/Hartley** – **Hartley's** positions are as follows: On October 1st – about 4.7° due east of **Kappa Auriga**; on the 5th – about 1.5° due west and a touch north of **NGC 2331**, or about 2.7° due north and a touch west of **Omega Geminorum**; on the 10th – about 0.7° due south and a touch west of **Delta Geminorum**; on the 12th and 13th – 0.5° from **NGC 2392** (the **Lion** or **Clown Face Nebula**); on the 15th – about 0.8° due west of **81 Geminorum**; and on the 20th – about 2° southeast of **8 Cancri**.

Meteor Showers – All information is from the **International Meteor Organization**. The maximum zenith hourly rate is marked as mzhhr.

There is only one **Major (Class I)** meteor shower active in October- the **Orionids**, active from September 26th through November 22nd, peaks on October 21 with a mzhhr of 23.

There are five **Minor (Class II)** meteor showers active in October. The **Southern Taurids** – active from September 23rd through November 12th, peaks on October 19th with a mzhhr of 5; the **Epsilon Geminids** – active from September 22nd through November 8th, peaks on October 19th with a mzhhr of 2; the **Leonis Minorids** – active from October 13th through November 3rd, peaks on October 21st with a mzhhr of 2; the **Southern Taurids** – active from October 11th through December 8th, peaks on November 6th; and the **Northern Taurids** – active from October 13th through December 2nd, peaks on November 13th.

There is one **Variable (Class III)** meteor shower active in October – the **Draconids**, active from October 8th through October 9th, peaks on October 8th.

There are twelve **Weak (Class IV)** meteor showers active in October – all have a mzhhr of <2. The **Daytime Sextantids** – active from September 22nd through October 13th, peaks on October 3rd; the

October Camelopardalids – active from October 5th through October 7th, peaks on October 6th; the **A Carinids** – active from October 13th through October 14th, peaks on October 14th; the **October Ursae Majorids** – active from October 10th through October 20th, peaks on October 16th; the **Tau Cancrids** – active from September 23rd through November 12th, peaks on October 21st; the **October Zeta Perseids** – active from October 25th only, peaks on October 25th; the **Lambda Ursae Majorids** – active from October 18th through November 7th, peaks on October 28th; **Southern Lambda Draconids** – active from October 29th through November 8th, peaks on November 4th; the **Chi Taurids** – active from October 24th through November 13th, peaks on November 4th; the **Kappa Ursae Majorids** – active from October 28th through November 17th, peaks on November 5th; the **Andromedids** – active from October 24th through December 2nd, peaks on November 6th; and the **Omicron Eridanids** – active from October 23rd through December 2nd, peaks on November 13th.

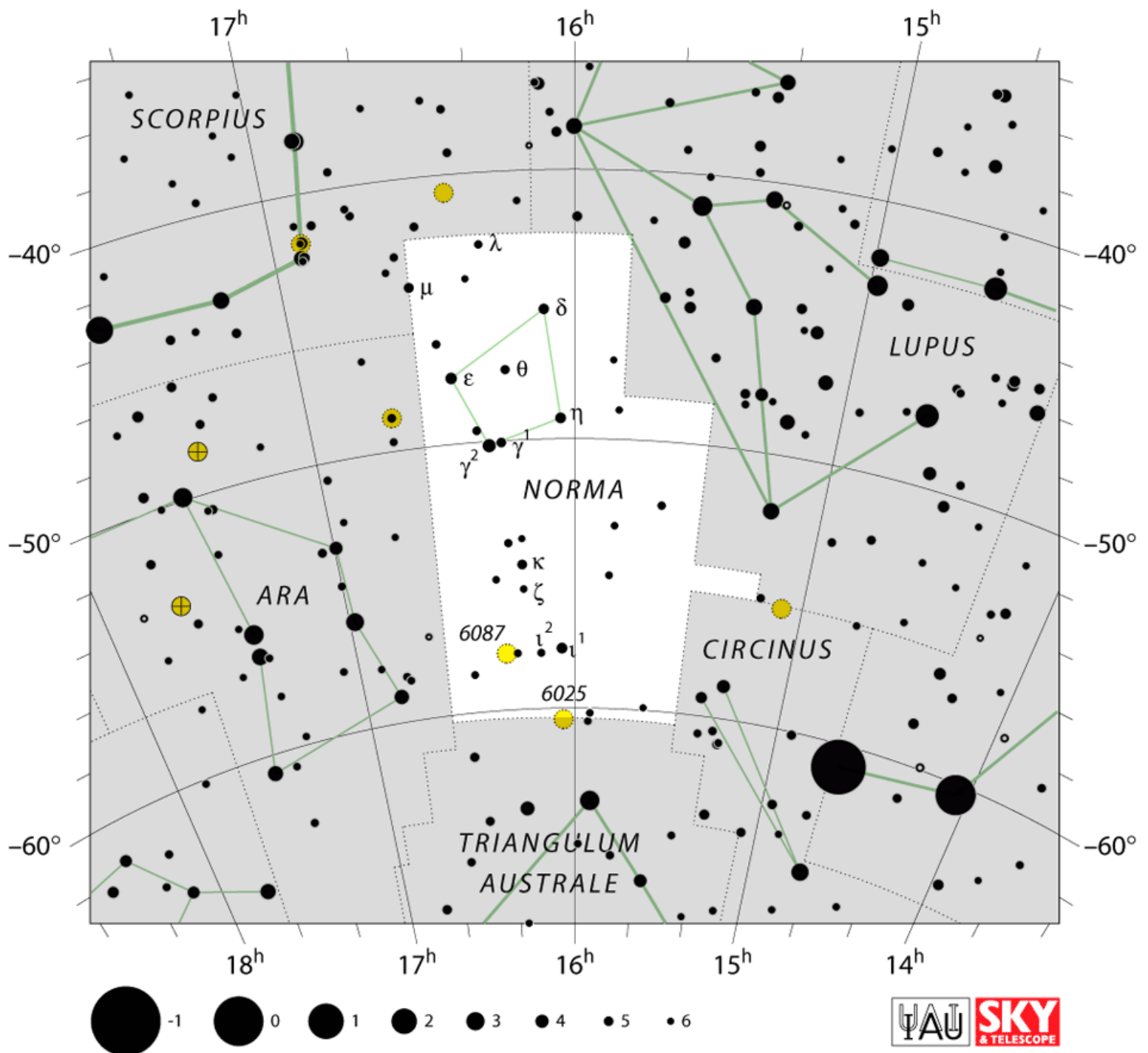
Mythology

Norma – The Rule (or Level)

Norma is one of the constellations introduced by the French astronomer Nicolas Louis de Lacaille following his mapping of the southern skies in 1751-1752. The constellation was often called *Norma et Regula* on old maps, for it represents a draughtsman's set-square and rule, placed next to the Compasses (Circinus), and a Builder's Level (Triangulum Australe).

The brightest stars of Norma are only 4th magnitude, and none have names. Because of changes in the constellation's boundaries since Lacaille's time, Norma now has no stars labeled Alpha and Beta (the star that Lacaille designated Alpha Normae is now part of Scorpius). Incidentally, Norma shares the distinction with Puppis and Vela, both of which lack stars labeled Alpha and Beta because they were once part of a much larger constellation, Argo Navis. When Argo Navis was split into three by Lacaille, the stars Alpha and Beta ended up in the third subdivision, Carina.





The End