
Artemis 1, scheduled for first space launch this month. Photo provided by BGR, see Page 9 for details.

## *Monthly Meeting September 12th 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:*** **Don Weinell will demonstrate how to put together & collimate his Obsession 12.5" f5 truss tube dobsonian scope, along with some pros and cons of this scope.**

# *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

September already – school is back in session, the weather should be starting to cool off a little, and slowly peeping up are the winter constellations. Still one month to go of hurricane season – so far so good.. Sidewalk Astronomy for the winter season is starting at Perkins Rowe on Tuesday, September 6th from 6 PM to 9 PM.

BRAS is working on a few projects. A list will be made of all telescopes/ equipment donated to or from BRAS for the last 10 years, and a separate binder will be used for checking out loaner telescopes – a list of those will also be made.

Scott and Ben have been working on a "**New Member Kit**" and the contents are almost finalized. We will start "Pre-printing" some of the included documents.

We are looking at modifying some of the donated telescopes for use as **Library Telescopes**. We will make appointments with the Goodwood Library and the West Baton Rouge Library to inspect, adjust, repair their telescopes. The Livingston Parish Public Library would welcome a donated telescope.

I have been in contact with SARA (**Society of Amateur Radio-telescope Astronomers** – I am a member), and they are willing to help advise on how to help BRAS and LSU refurbish the radio-telescope at HRPO.

**ALCon 2023**. Our Keynote Speaker will be David Eicher, Editor-in-Chief of Astronomy Magazine, author of books (I have two of his signed books) including a collaboration on two books with Dr. Brian May (of Queen fame). We are also working on getting Fred Espenak (Solar Eclipse expertise) as a speaker and many others as Speakers/Panelists.

Michele and I attended the **ICC (Inter Civic Council of Greater Baton Rouge) gala banquet** at the Goodwood Library (photo above) and made contact with the leadership of several local organizations who seemed interested to help promote ALCON 2023 when the time comes for that. I got their business cards.

The expansion of Interstate 10 next year will cause traffic problems for ALCON field trips to LSU, HRPO, LIGO, and others for the attendees of ALCon 2023. We are looking into alternative routes to be used.

All the ALCon 2023 committees could use more help. Please. The contacts are Steven Tilley – Co-Chair, John Nagle – Co-chair, and Scott Cadwallader – Vice-chair.

Clear Skies, and Happy Labor Day
John Nagle, 2022 President

John R. Nagle

**P.S.**
**On Page 22 of this newsletter is a**
**BRAS Survey for 2022.**
**Please print it out, fill it in and get it to me via one of the methods described, so we can know better know how to serve your interests, and how we may call upon you to help the club grow.**

**The Proxy Vote Form will be placed on the BRAS website for member use as needed.**

**Upcoming BRAS Meetings:**

**Light Pollution Committee: NEW TIME thru December: 6 pm Monday, September 12th,** one hour before the monthly meeting. (In person only, Open to the public}

**Monthly Member Meeting – 7 pm Monday, September 12th** at the Observatory, in person and via Jitsi (Open to the public}

**Monthly Business Meeting:7 pm Wednesday, September 28th** (Members Only), in person and via Jitsi

**MOON (Members Only Observing Night) TBA**

**ALCon 2023 ("Astronomical Gumbo") Committee Meeting** Two meetings: Sunday, Sep 11, 2022, 7 PM and Sunday, Sep 25, 2022, 7 PM, both online.

# Monthly Meeting Minutes – August

- Welcome by the president, John Nagle.
- There was no lecture scheduled for the evening due to the unavailability of speakers.
- There was a brief discussion about going into hiatus in the summertime. Don volunteered to bring his telescope in and be the speaker for September.
- BREC celebrated its 75th anniversary at Independence Park Theatre recently. John got to go to the reception and meet with the mayor who said she would help with our ALCON 2023 event.
- We got a lovely thank you note from Diane Smith (Forrest's wife) for the plant and sympathy card the club sent her for Forrest's funeral; John read the note to the group.
- John attended virtual meetings for RASC and ALPO and won an 18 mm Celestron eyepiece as a door prize from ALPO.
- There is a virtual event coming up at the Lick Observatory having to do with shadowing a scientist; see John for details if you are interested.
- The Inter Civic Council of Greater Baton Rouge is having a dinner tomorrow night. John and Michele plan to go. This group should be able to help us next year when we host ALCON 2023.
- Three BRAS members showed up at ALCON 2022, Steven, Roz, and Scott C. Scott C. received his Master Observer Award at the Saturday banquet there. Steven played the video in the meeting that had been created to play at the ALCON 2022 event. All three spoke about their experiences in Albuquerque.
- The hotel venue for ALCON 2023 is still being finalized with a walkthrough scheduled for this Wednesday. We are looking for sponsors, speakers, and volunteers and hope to set up events at the Planetarium and LIGO. Any ideas that would work well with this convention (the Clark refractor, CAMD, and the Knock Knock museum have been suggested) plus ideas about fundraising, please let Steven know.
- 922 people went through Sunday's outreach event. Troy and Scott C. showed up at the Big Buddy event on Friday. Perkins Rowe will be making a comeback in September on a Tuesday close to the first quarter phase of the moon. The Maker Faire may be a possible event in October. Name tags are in for those who ordered them (cost to member = $5). Ben will be doing a second run soon for a couple of new members plus the two generic ones that say "Volunteer".
- MOON Night is scheduled for Friday, August 19th
- Don announced that he and his son a scheduled to attend the Artemis launch at Cape Canaveral on August 29th.
- Coffee mugs and other media were raffled off; coffee and cookies were available to those who showed up at HRPO.

Minutes submitted by Roz Readinger, Secretary

## 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

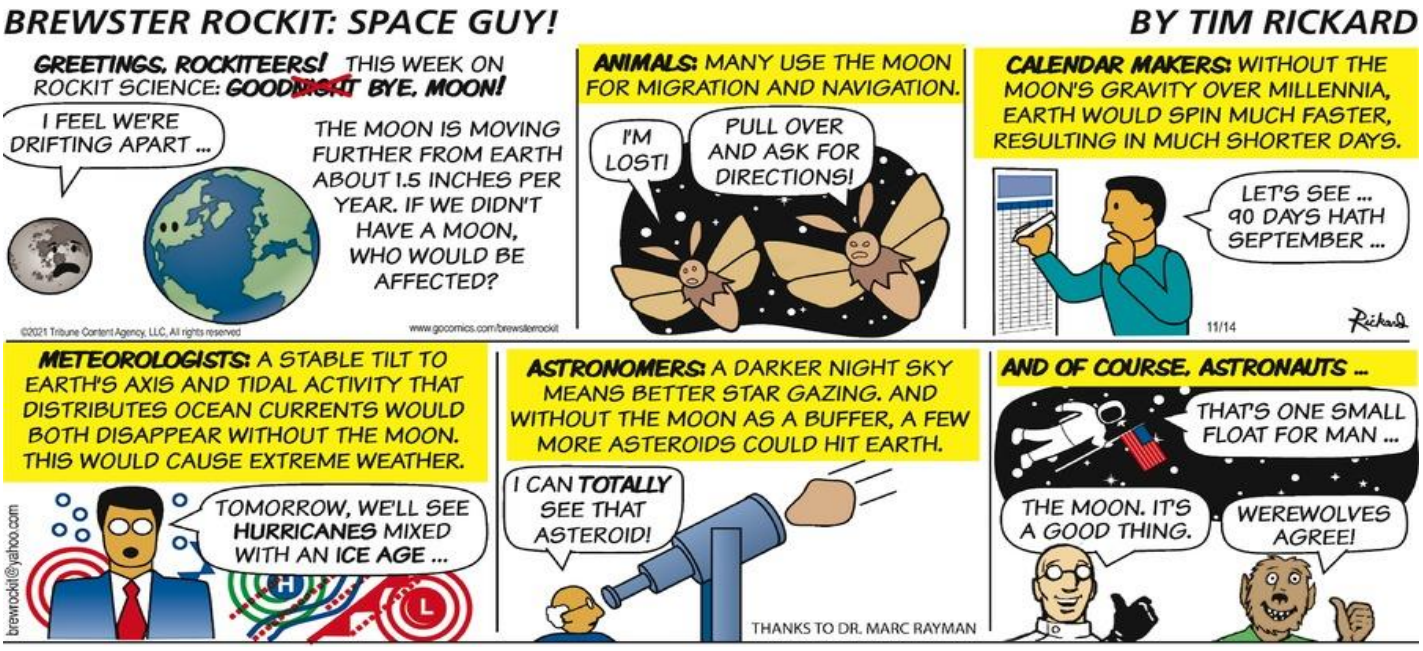
**Committees/Coordinators:**
al_awards@brastro.org
Merrill Hess
lightpollution@brastro.org
??????
newsletter@brastro.org
Michele Fry
observing@brastro.org
John Nagle
outreach@brastro.org
Ben Toman
public_relations@brastro.org
Scott Cadwallader
webmaster@brastro.org
Frederick Barnett

# Business Meeting Minutes – August 31, 2022, 7 p.m.

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

- We discussed getting a new web camera/cables/microphone for use with the BRAS computer and with the HRPO set-up for meetings. Ben has been investigating and will give his recommendations soon.
- Discussed magnetic car door signs for outreach. We now have a vector design of the BRAS logo (not the color version). Awaiting estimates for the signs.
- Scott and Ben have been working on a "New Member" kit and are finalizing what will be in it. We decided that we could start "pre-printing" some of the material to be included into the kits.
- Library Telescope – we need to make an appointment to check out the telescope at the Goodwood Library and align/repair whatever is needed. The Livingston Parrish Library has said they would welcome a telescope donated to them.
- Donated telescopes – we discussed how we might modify some of the telescopes donated to BRAS to be used as Library Telescopes. We also decided to make up a list of donated telescopes and their disposition (for sale, check-out by members, for use at HRPO, for outreach use, etc.). The list will be kept on file at HRPO. There will be a separate binder used for checking out the loaner telescopes.
- ALCon 2023 – we discussed a few minor items because there are separate committee meetings and general meetings where the committees report progress and in-depth discussion at this meeting was not necessary.
- There were 5 members present and one on-line at the meeting.

*Submitted by John Nagle for Roz Readinger, Secretary*



# Outreach Report for August

Hi Everyone,

The end of Summer is nigh, and we've had a good August to help usher it out. We were able to do a nice outreach for the **Big Buddy program at the Louisiana Resource Center for Educators** (thanks to Scott and Troy!) and we had a great time at the **Louisiana Art and Science Museum** doing an outreach there to help celebrate the **James Webb Space Telescope**. (Thanks to Chris K., Chris R., Scott, John, Craig, Steven and Ben!)


Outreach endeavors like those are very impactful for the community. We opened some eyes, made some great contacts and put smiles on a lot of faces with just a few hours of effort. It's important to the future of our club and the hobby we love that we do these sorts of things. You never know the impact you are going to have on someone whether it's reigniting a passion in an adult or introducing a young person to the wonders of astronomy. Maybe we won't get new members immediately following an event, but the impression we leave can lead someone to joining when they have time in the future. be it weeks or months (for adults) or even years (for some of the young ones.) Even if they never join the club or even take up the hobby, they may find themselves in a position to support our club, or just astronomy in general, when community proposals come up for good lighting (hopefully!) or new endeavors regarding astronomy and space (e.g. new facilities or further space exploration).

We have a few more opportunities on the horizon and also the return of our Sidewalk Astronomy at Perkins Rowe. Please take a look at the list below and let me know if you'd like to jump in and start being one of our volunteers for the events. I've said it before and I'll keep saying it, it's a great way to learn even more about the hobby you already love, contribute in a great way to the betterment of the community and have a fun time while doing it!

*Photo Captions:*
*- Scott and Troy presenting the Big Buddy program*
*- John and Scott educating away at the LASM*
*- Chris R. with his solar setup outside the LASM*

# Upcoming Events

**Tuesday, September 6th**
6pm-9pm
Sidewalk Astronomy Perkins Rowe
Show up with a scope or just yourself! It's a free-for-all!

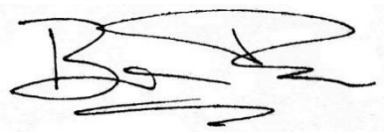
**Friday, September 16th**
9am-11am
Port Hudson State Historic Site School Days
Presentation/Demo with possible Solar Viewing

**Thursday, September 29th**
1pm-?
Claiborne Senior Living
Presentation/Demo with possible Solar Observing

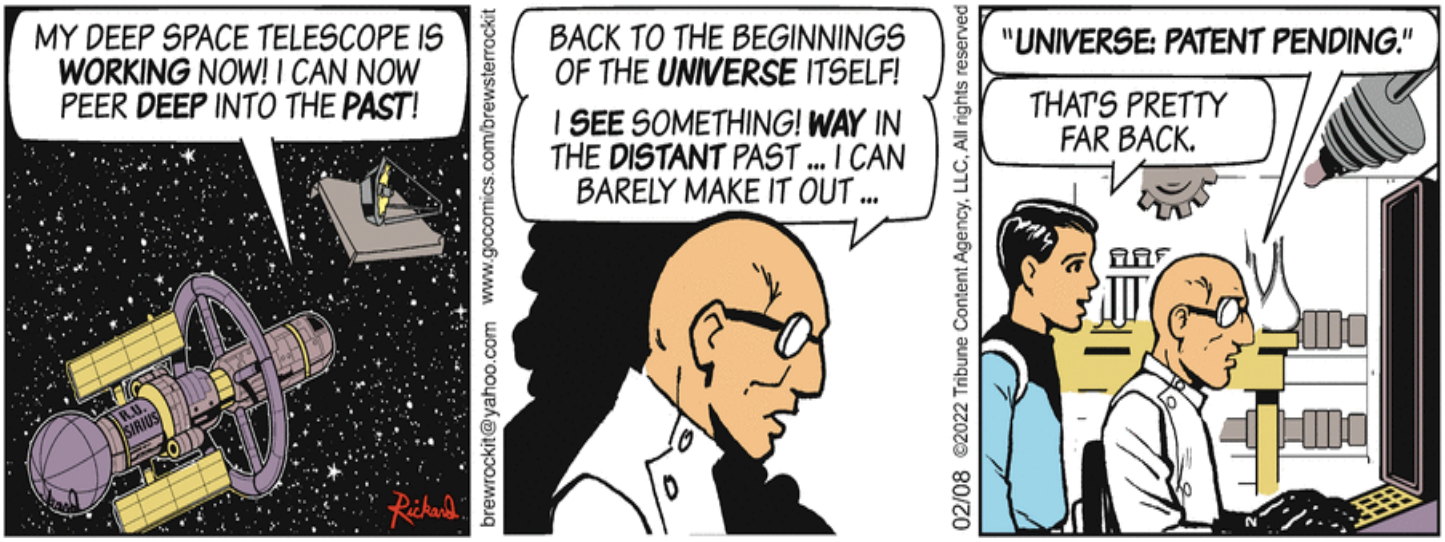
**Tuesday, October 4th**
6pm-9pm
Sidewalk Astronomy Perkins Rowe

**Saturday, October 15th**
10am-2pm (Time could change, but this was the timeframe for last year's event)
Baton Rouge Mini Maker Faire Main Library
Demo/Info table, solar observing

Clear Skies, Ben Toman



*Craig (arms), Scott, Steven and Ben (kneeling in back) doing their thing at the LASM*



# 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.

There was No quorum present for the first half of the meeting.
The light Pollution Petition Update was discussed.
The survey of all outside luminaires at BREC facilities was discussed.
Contact with other groups was discussed.
Two members present, one later joined on-line.

John Nagle, Chairman Pro-Tem

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# Globe At Night

The target for the Globe at Night program is
**Cygnus from September 17th through September 26th**
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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# 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

# 2023 Astronomical League Convention in Baton Rouge!

BRAS has the honor of being the first to host an AL-CON in Louisiana since AL's inception in 1939.

## Our theme is "Astronomical Gumbo"

This theme represents the blend of diverse subfields within the vast field of astronomy. People from all over the globe will be in attendance for the biggest yearly gathering of amateur astronomers in the nation. This convention will offer a large range of benefits not only to BRAS, but to HRPO, other nearby astronomy facilities, and the tourism industry of Baton Rouge. For example, the publicity will bring in many new club members and allow us to reach a much larger audience to share our love of astronomy with. There's not a better time than now to get involved, and lots of help will be necessary to make this event one to remember. Volunteers from all areas of any skill level are welcome to join any of the subcommittees: Scheduling, Finance, Publicity/Communications/Photography, Venue & Housing, Transportation, and Reports.

**Next Full committee meetings:** **Sundays, September 11 and 25, 7 p.m., Online**

If you would like to attend this meeting, and/or help by working on a subcommittee please send an email to Steven Tilley at stevеareno225@gmail.com.


This flyer, designed by Natalia Brue, our Publicity Chairman for ALCON 2023, was on display at ALCON's 2022 Convention.

# Watch the Artemis I launch live on NASA TV

Currently, **NASA hopes to launch Artemis I on Saturday, September 3, 2022**. NASA says it will stage for blastoff at **2:17 p.m. EDT on Saturday**.

This is one day later than the space agency's original backup launch date of Friday, September 2. Unfortunately, there does appear to be a chance of storms during the rocket's two-hour launch window, so it's possible we won't get to watch Artemis I launch that day, either. Eventually, Artemis I will liftoff and begin its 40-day journey around the Moon.

It's a historic launch for the space agency, and one that will no doubt be long remembered for the new era of exploration it begins. You can watch the Artemis I launch on NASA TV, on NASA's website, and on YouTube.

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*And from the New York Times: September 1, 2022, by German Lopez*

## *Why the moon?*

*Several factors are driving NASA to get astronauts back to the moon for the first time in more than 50 years. One is a long-running desire to get human beings on Mars. The Artemis missions will test some of the technology and logistics required to do that.*

*"If you believe that the future of humanity is spreading across the solar system, the first stop has to be the moon," my colleague Ken Chang, who covers NASA, told me. "If you can't figure that out, you're certainly not getting to Mars."*

*But a mission to the moon also has some scientific value on its own. Rocks collected in previous missions, for example, revealed the moon's origin: It likely formed from debris after an object the size of Mars hit Earth more than four billion years ago.*

*In the Artemis missions, NASA is especially interested in studying ice in lunar craters. Depending on how long it's been there, the ice and its characteristics could provide a history of the solar system. The ice could also be used to establish permanent bases on the moon, if it can be turned into drinking water, oxygen or spacecraft fuel (as Ken explained in The Times).*

# Messages from HRPO

*Highland Road Park Observatory*

## FRIDAY NIGHT LECTURE SERIES

*All start at 7:30pm. All are for ages fourteen and older.*

**2 September = "The Artemis Mission"** Whatever happened this past week, Amy Northrop (as JPL Solar System Ambassador) will update the Friday night crowd. Were we successful? If so, what's next?

**9 September = "Supernova 1987A"** It has been thirty-five years since this amazing event galvanized professional astronomers and amateur skygazers across the continents. BREC Program Aide James DeOliveira will discuss that special night and what the remnant has been doing since.

**23 September = "The DART Asteroid Mission"** In late September or early October, NASA intends to slam an impactor into the asteroidal moon Dimorphos. If its orbit around the parent asteroid Didymos is shortened, we may have proven capability to redirect an asteroid that could harm life on Earth.

**30 September = "Buying Skygazing Equipment"** BRAS members give an overview of this year's economic landscape for binoculars, telescopes, flashlights, eyepieces and filters.

## EVENING SKY VIEWING

*No admission fee. For all ages.*
*Friday (2, 9, 23 and 30 September) from 8:30pm to 10pm*
*Saturdays (3 and 17 September) 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 ages eight to twelve. $5/$6 per child.*

**3 September = "Deep Space Objects I"** In the first session, Cadets will learn what a deep-space object is, and what the closest ones are.

**10 September = "Deep Space Objects II"** In the second session, Cadets will learn how information from clusters and nebulae is gathered and analyzed.

**24 September = "Jupiter"** The most massive object in our Solar System besides the Sun, Jupiter will suprise Cadets with its magnetic field, its moons, its aurora!

## PLUS NIGHT: "The Icy Outposts"

*Saturday 10 September from 9pm to 12am.*
*For all ages. No admission fee. Binocular recommended.*

During Plus Nights and extra features are available to the public…
*The well-known marshmallow roast takes place at the campfire ring (weather-depending).
*Six to eight of HRPO's collection of over fifty physical science demonstrations will be on hand to perplex and amaze. Which demos will it be?
*An unaided eye sky tour takes place, showing the public major features of the sky for that month.
*Filters are inserted into the viewing mechanisms, to show patrons "hidden" details of the Moon, Mars and Jupiter (when they are available).
*Reveal your age, and be shown any "birth stars" in the sky at that time.

## NEPTUNIAN OPPOSITION

*Friday 16 September from 9:45pm to 11:45pm.*
*No admission fee. For all ages.*

Neptune is exactly 180 degrees from the Sun, rising as the Sun is setting. We are now the closest we'll be to Neptune this year! Weather permitting viewing of Neptune will take place.

## STEM EXPANSION: "Outer Solar System Explorers"

*Saturday 17 September 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.

## SOLAR VIEWING

*Saturday 24 September 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.

## JOVIAN OPPOSITION

*Monday 26 September from 9:30pm to 11:30pm*
*No admission fee. For all ages.*

Jupiter is exactly 180 degrees from the Sun, rising as the Sun is setting. We are now the closest we'll be to Jupiter this year! Weather permitting viewing of Jupiter will take place.

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## Balloons Detect an Earthquake from the Stratosphere

*article submitted by Craig Brenden*

*Researchers prepare to launch a Strateole-2 balloon with sensors capable of detecting earthquakes from thousands of kilometers away.*

AUGUST 9, 2022 / DR.TONY PHILLIPS

A new paper just published in the *Geophysical Research Letters* reports the detection of a magnitude 7.3 earthquake by a fleet of balloons floating through the stratosphere above Indonesia's Flores Sea. Onboard infrasound sensors registered acoustic waves rippling upward from the sea surface below, proving that, here on Earth, balloons can be used as seismometers.

"The same technique should work in the atmosphere of Venus," . . . . . read more at link below:

**Balloons Detect an Earthquake from the Stratosphere | Spaceweather.com (spaceweatherarchive.com)**

# OBSERVING NOTES SEPTEMBER

## Draco – The Dragon

**Position: RA 17, Dec. +65°**

***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*

**Thuban (Alpha Dra), "head of the serpent", "the Snake", "the Basilisk", "Yu Choo" from the Chinese for "The Right-Hand Pivot", "Dayan Esiru"-"The Prospering Judge", and "Dayan Shishs"-"The Judge Directing",** mag. 3.67, 14 04 23.43 +64 22 32.9, is a spectroscopic binary star consisting of a white giant star with a companion being a white or red dwarf star with an orbital period of 51.38 days and a separation of about 20 million miles. The primary has strong silicon lines in its spectrum. It was the pole star from 3,942 BC to 1,793 BC and, due to precession, it will again be the pole star around the year 21,000 AD. One of the shafts in the Great Pyramid of Khufu was lined up to show **Thuban** at the time the pyramid was built. Also known as **HD 123299**, **HIP 68756**, and **11 Draconis**.

**Rastaban (Beta Dra), from the Arabic "Al Räs al Thu'bän", "The Dragon's Head" (one of the Dragon's eyes), also called Rastaben, Alwaid, and Asura,** mag. 2.79, 17 30 25.98 +52 18 04.4, is a binary system with the primary a yellow star half-way between the bright giant and the supergiant evolutionary stages. The secondary is a dwarf star at magnitude 11.5 and a separation of about 320 AU. Also known as **HD 159181**, **HIP 85670**, **β1090**, and **23 Draconis**.

**Eltanin (Gamma Dra), from the Arabic "Al Räs al Tinnïn", "The Dragon's Head", "The Great Serpent", Egyptian Taurt Isis, also called Etamin, Rastalan, and Rastaben**, mag. 2.24, 17 56 36.38 +51 29 20.2, is an orange giant star with several faint optical companions – a likely red dwarf star at magnitude 13.4 at a separation of 21"; 2 each at 12.5 magnitude at separations of 48" and 56"; and a 11.4 magnitude star at a separation of 97". Also known as **HD 164058**, **HIP 87833**, and **33 Draconis**.

**Altais (Delta Dra), from the Arabic "Al Tais", "The Goat", and "Al Tayyasän" (one of) The Two Goatherds", also called Nodus Secundus, Nodus II, and Aldib,** mag. 3.07, 19 12 33.15 +67 39 40.7, is a yellow giant star. Also known as **HD 180711**, **HIP 94376**, and **57 Draconis**.

**Tyl (Epsilon Dra),** mag. 3.84, 19 48 10.21 +70 16 04.2, is a binary star with the primary being a yellow giant star and the companion, magnitude 7.3, being an orange dwarf star at a separation of 3.2". Also known as **HD 188119**, **HIP 97433**, **Σ 2603**, **ADS 13007**, and **63 Draconis**.

**Aldhibah (Zeta Dra), from the Arabic "Al Dhi'bah", "The Hyenas", from the Chinese "Shang Pih", "The Higher Minister", also called Eldsib, Nod, Nodus III,** mag. 3.17, 12 08 47.23 +65 42 52.7, is a blue giant star. Also known as **HD 155763**, **HIP 83895**, and **22 Draconis**.

**Aldibain (Eta Dra), "Athebyne", from the Chinese "Shang Tsae", "The Minor Steward",** mag. 2.73, 16 23 59.51 +61 30 50.7, is a yellow giant star with a faint dwarf star companion at

magnitude 8.2 and a separation of 4.8" (125 AU). Σ 2054 is 11" to the north. Also known as **HD 148387**, **HIP 80331**, **OΣ 312**, **ADS 10058**, and **14 Draconis**.

**Shăngzăi (Theta Dra), from the Chinese "Hea Tsae", "The Lowest Steward",** mag. 4.01, 16 01 53.70 +58 33 52.0, is a yellow-white main sequence star and a very close spectroscopic binary with an orbital period of 3.0708216 days. It is a fast rotator with a speed of 28 km/second or more at the equator – it makes a complete rotation in less than 4.5 days. The companion star is believed to be a dwarf star. Also known as **HD 144284**, **HIP 78527**, and **13 Draconis**.

**Edasich (Iota Dra), also called Eldsich, Ed Asich, Al Dhihi, and Al Dhiba,** mag. 3.29, 15 24 55.78 +58 57 57.7, is a giant star with one planet in orbit – the first discovered to orbit a giant star. Also known as **HD 137759**, **HIP 75458**, and **12 Draconis**.

**Shăowêi (Kappa Dra),** mag. 3.85, 12 33 29.04 +69 47 17.6, is a blue giant star. Also known as **HD 109387**, **HIP 61281**, and **5 Draconis**.

**Giausar (Lambda Dra), or "Giauzar" from the Arabic "Al Jauzä", "The Twins of Al Jauzäh", "The Central of Juzä", also called Gianfar, Giansar, Gaiusar, Juzä, Nodus Secundus – "The Second Knot", and Shang Poo or Shau Poo,** mag. 3.82, 11 31 24.29 +69 19 52.0. Also known as **HD 10029**, **HIP 56211**, and **1 Draconis**.

**Arrakis (Mu Dra), or Errakis or Al Rakis, from the Arabic for "Dancer", also called "Al Räfad", "The Camel Pastures Freely", and Ca'ab", "The Little Shield (or Salver)",** mag. 4.91, 17 05 20.18 +54 28 11.5, is a double star composed of two white stars with an orbital period of 670 years and a separation of 1.9" or about 70 AU. There is a 13th magnitude dwarf star companion at an AC separation of 14" or about 400 AU (Note: shades of ***Dune***!). Also known as **HD 154905**, **HIP 83608**, **Σ 2130**, **ADS 10345**, **HII-3**, **WDS 17053+5428**, **β 1089**, and **21 Draconis**.

**Kuma (Nu¹ Dra), "at last",** mag. 4.89, 17 32 10.4 +55 11 02.8, is a white dwarf star, a spectroscopic binary star, and a binary star with **Nu² Draconis**. The primary's faint low mass companion has a period of 38.5158 days. **Nu² Draconis**, mag. 4.86, 17 32 15.88 +55 10 22.10, is also a white dwarf star at a separation of 62" or about 2300 AU. **Nu¹ Draconis** is also known as **HD 159541**, **HIP 85819**, and **24 Draconis**. **Nu² Draconis** is also known as **HD 159560**, **HIP 85829**, and **25 Draconis**.

**Grumium (Xi Dra), "jaw", also called Genam, Nodus Primus, and Nodus I,** mag. 3.73, 17 53 31.63 +56 52 20.8, is an orange giant star. Also known as **HD 163588**, **HIP 87585**, and **32 Draconis**.

**Alsafi (Sigma Dra), a corrupted form of the Arabic "Athäfi", "Cooking Tripod",** mag. 4.67, 19 32 20.59 +69 39 55.4, is a main sequence dwarf star with a Jupiter size companion that was discovered in 2007. Also known as **HD 185144**, **HIP 96100**, and **61 Draconis**.

**Shăobi (Upsilon Dra),** mag. 4.82, 18 54 23.77 +71 17 49.5, is a double star (**Upsilon ¹** and **Upsilon² Draconis**). Also known as **HD 176524**, **HIP 92782**, **ΣI 35**, **ADS 10628**, and **52 Draconis**.

**Zhůshy (Phi Dra), from the Chinese "Shaou Pih", "The Minor Minister", and sometimes called "Batentaban Australis" from the Arabic "Batn al Thuban",** mag. 4.22, 18 20 45.44 +71 20 15.8, is a multiple star system composed of hydrogen fusing dwarf stars with the two brighter components orbiting each other with a period of 307.8 years. The primary is an un-resolvable binary star. Also known as **HD 170000**, **HIP 89908**, and **43 Draconis**.

**Kwei (Chi Dra), Ske, sometimes called "Batentaban Borealis" from the Arabic "Batn al Thuban",** mag. 3.55, 18 21 02.34 +72 44 01.3, is a spectroscopic binary star. The primary is yellow-white, and the secondary is an orange star at magnitude 5.67. The two stars have an orbital period of 280.55 days with their average separation being just under 1 AU. Also known as **HD 170153**, **HIP 89937**, and **44 Draconis**.

**Dziban (Psi¹ Dra), from the Arabic "Al Dhi'bain", "The Two Jackals", also Dsiban, and "Nu She" from the Chinese for "The Palace Governess" or "Literary Woman",** mag. 4.57, 17 41 56.3 +72 08 58.2, is one of the two stars in the system. It is a yellow-white star. **Psi² Draconis**, mag. 5.43, 17 55 11.14 +72 00 18.5, is a yellow star. The separation between the two stars is 30.3'. **Psi¹ Draconis** is also known as **HD 162003**, **HIP 86614**, **Σ 2241**, **ADS 10759**, and **31 Draconis**. **Psi² Draconis** is also known as **HD 164613**, **HIP 87728**, and **34 Draconis**.

**Fafnir 42 Draconis),** mag. 4.82, 18 25 58.99 +65 33 48.8, is a giant star with a super-Jupiter size planet in orbit. Also known as **HD 170693** and **HIP 90344**.

**Taiyi (8 Draconis),** mag. 5.23, 12 55 28.56 +65 26 18.8. Also known as **HD 112429**, **HIP 63076,** and **IR Draconis**.
**Tianyi (7 Draconis),** mag. 5.43, 12 47 34.34 +66 47 25.1. Also known as **HD 111335**, **HIP 62423**, and **7 Draconis**.
**Alruba (HD 161693),** mag. 5.76, 17 43 59.17 +53 48 06.16. Also known as **HIP 86782**.
**Funi (HD 109246),** mag. 8.77, 12 32 07.19 +74 29 22.4. Also known as **HIP 61177**.

# *Deep Sky:*

**M102 (NGC 5866?), "The Spiral Galaxy",** mag. 9.9, 15 06 58.0 +55 46 00, 6.6'x3.2' in size, is one of the "missing" Messier objects. The discoverer, Mechain, "discovered" it in a letter to Bernouilli at Berlin in 1783 as a duplicate observation of **M101**. The letter was published in the "***Bertliner Astronomiches Jahrbuch***" for 1786. A translation of the relevant paragraph of the letter is as follows: 'on page 267 of the "***Connaissance des Temps for 1784***", M. Messier lists under No. 102, a nebula which I have discovered between **Omicron Boötes** and **Iota Draconis**. This is nothing but an error. This nebula is the same as the preceding No. 101. In the list of my nebulous stars communicated to him, M. Messier was confused due to the error in the sky chart'. There is still controversy about this Messier object. It is generally assumed to be **NGC 5866**.
**NGC 6543, "The Cat's Eye Nebula",** mag. 8.1, 17 58 36 +66 38, 18' in size, center star at magnitude 10.9, is a very bright, irregular oblong disk planetary nebula located half-way between **Delta** and **Zeta Draconis**. The **North Ecliptic Pole** is 9.6' to the north-northwest. This nebula is related to **IC 4677** – a nebula that appears as a bar 1.8' to the west. **NGC 6543** was the first planetary nebula to be observed with a spectroscope. Also known as **Caldwell 6**, **Zw 759**, **CGPG 1758.5+6638**, **IRAS 17584+6638**, and **NEP 0270[WB92]1758+6637**.
**NGC 4125,** mag. 9.5, 12 09 11 +65 03 10, 6.1'x5.1' in size, is a pretty bright, pretty large galaxy. Paired with **NGC 4121**. Also known as **PGC 38524**, **UGC 7118**, **CGCG 315-019**, **CGCG 1205.6+6527**, **MCG+11-15-027**, **IRAS 12055+6527**, and **HOLM 335A**.
**NGC 4236,** mag. 9.6, 12 17 43 +69 20 30, 21.9'x7.2' in size, is a very faint, extremely large and very elongated galaxy. Paired with **Holmberg 357B**. Also known as **Caldwell 3**, **PGC 39346**, **UGC 7306**, **CGCG 335-008**, **CGCG 1214.4+6945**, **MCG+12-12-004**, **IRAS 12143+6945**, **KIG 0523**, and **HOLM 357A**.
**NGC 5866 (M102?),** mag. 9.9, 15 07 07 +55 40 56, 4.7'x1.9' in size, is a very bright and quite large Seyfert galaxy; elongated, thin, edge on; very bright nucleus with a dark lane. Also known as **H1-215, PGC 53933**, **UGC 9723**, **CGCG 274-016**, **CGCG 1505.1+5557**, **MCG+9-25-007**, **IRAS 15051+5557**, and **LGG 396: [G93]001**.
**UGC 10822, "Draco Dwarf Galaxy",** mag. 9.9, 17 20 36 +57 53 54, 23.9'x37.15' in size, is a spheroidal galaxy. It contains five carbon stars, four suspected asymptotic giant branch (AGB) stars, a number of red giant branch (RGB) stars, and more than 260 variable stars, all but five of which are of the **RR Lyrae** type. This galaxy is believed to contain a large amount of dark matter. Also known as **PGC 60095** and **MCG+10-25-008**.
**Arp 188, "The Tadpole Galaxy",** mag. 14.4, 16 06 35 +55 22 01, 5.2'x5.2' in size, is a disrupted (collided) barred spiral galaxy and is noted for its enormous trail of stars that is about 280 thousand light-years long. Also known as **UGC 10214**.
**Q1634+706,** mag. 14.4, 16 24 39 +20 31 33, is a Quasar noted for being the most distant object in the night sky that can be seen ai an amateur telescope and is roughly 12.9 billion light-years distant at a red shift of z = +0.905.
**Abell 2218,** 16 35 54 +66 13 00, is a galaxy cluster containing about 10 thousand galaxies. It has been used as a gravitational lens to find an object - a 13-billion-year-old galaxy. Abell 2218 has a red shift of z = +0.175.
**Quadrans Muralis,** 15 50.0 +55 50, 4'x3' in size, is an arc of stars (including **CL Draconis**) that is an abandoned constellation and has given its name to the annual meteor shower known as the **Quadrantids**.

**Asterisms:**

**Al ‘Awäĭd, “The Mother Camels”,** later called **“Quinque Dromedarii”,** is **Beta, Gamma, Mu, Upsilon,** and **Xi Draconis.**
**Al ‘Awwäd, “The Lute Player”,** is also **Beta, Gamma, Mu, Upsilon, and Xi Draconis.**
**Al Sali’b al Wäki, “The Falling Cross”, also Beta, Gamma, Mu, Upsilon,** and **Xi Draconis.**
**Al Räkis, “The Dancer”** or **“The Trotting Camel”,** is also **Beta, Gamma, Mu, Upsilon,** and **Xi Draconis.**
**Al Dhĭ’bain, “The Two Hyenas** or **Wolves”,** is **Zeta and Eta Draconis.**
**Al Aṯhfär al Dhĭb, “The Hyaena’s Claws”,** consists of the dim stars between **Zeta Draconis** and the group of stars **Phi, Chi, Psi, Omega,** and **f Draconis.**
**Athäfiyy, “Tripods of the Open-Air Kitchen”,** is **Sigma, Tau,** and **Upsilon Draconis.**
**Auhakän, “The Two Black Bulls** or **Ravens”,** is **Zeta** and **Eta Draconis.**
**Dragon’s Eyes,** and from the **Chinese Tien Kae,** is **Beta** and **Gamma Draconis.**
**The Goat** is **Delta, Pi, Rho,** and **Epsilon Draconis.**
**Group of Camels,** consists of **Beta, Gamma, Mu, Nu,** and **Xi Draconis.**
**Little Queen,** 18 35.0 +77 25, is a rather prominent “W” shape of 7th and 8th magnitude stars.
**The Lozenge,** is the head of **Draco,** consisting of **Beta, Gamma, Xi,** and **Nu² Draconis.**
**Tien Choo, “Heaven’s Kitchen”,** consists of **Delta, Pi, Rho, Epsilon,** and **Sigma Draconis.**

**The Deep Sky contains the following objects: 295 NGC; 35 IC; 196 UGC; 4 UGCA; 161 MCG; 13 Radio Galaxies; 14 Quasar galaxies; 14 CGCG; 15 AGC; 2 Caldwell; 17 Arp; 3 HCG; 15 VV; 5 PK; 86 Herschel; 2 K1; 1 Kemble; 5 PG; 1 Kun; 1 Ku; 1 HI; 1 Pat; 1 Es; 11 PGC; 1 8C; 6 Shk; 3 Mrk; 3 HS; 11 IRAS; 1 Watson; 1 Kron; 1 KUV; the Draco dwarf galaxy; and the Quadran Muralis, for a total of 974 deep sky objects.**

## *Other Stars:*

**HD 81817,** mag. 4.28, 09 37 05.35 +81 19 35.1, has one planet in orbit. Also known as **HIP 47193**.
**HD 106574,** mag. 5.72, 12 15 08.53 +70 12 00.3, has one planet in orbit. Also known as **HIP 59746**.
**HD 139357,** mag. 5.97, 15 35 16.22 +53 55 19.7, has one planet in orbit. Also known as **HIP 76311**.
**HD 113337,** mag. 6.01, 13 01 47.15 +63 36 36.6, has one planet in orbit. Also known as **HIP 63584**.
**UX Draconis,** mag. 6.22, 19 21 35.53 +76 33 34.6, a variable carbon star. Also known as **HIP 95154**.
**HD 164428,** mag. 6.25, 17 50 10.10 +78 18 23.5, has one planet in orbit. Also known as **HIP 87293**.
**HD 158259,** mag. 6.46, 17 25 24.14 +52 47 26.9, has five planets in orbit. Also known as **HIP 85268**.
**RY Draconis,** mag. 6.63, 12 56 25.89 +65 59 39.9, is a variable carbon star (magnitude 6.5 to 8.0, with a 172-day period). Also known as **HIP 63152**.
**HD 143105,** mag. 6.75, 15 53 37.0 +68 43 12, has one planet in orbit. Also known as **HIP 77838**.
**HD 97619,** mag. 6.88, 11 16 08.9 +78 18 32, has one planet in orbit. Also known as **HIP 55048**.
**BY Draconis,** mag. 8.07, 18 33 55.77 +51 43 08.9, is a multiple star system composed of a close binary with its components orbiting each other every 5.98 days. The two stars are believed to be pre-main sequence, still in the process of collapsing gas. The third star in this system is separated from the main pair by 17” and is a red dwarf star. There is a fourth unconfirmed component – a proto-type star. Also known as **HD 234677** and **HIP 91009**.
**HD 156279,** mag. 8.08, 17 12 23 +63 21 08, has one planet in orbit. Also known as **HIP 84171**.
**HD 163607,** mag. 8.15, 17 53 40 +56 23 31, has two planets in orbit. Also known as **HIP 87601**.
**HIP 91258,** mag. 8.65, 18 36 53.0 +61 42 09, has one planet in orbit.
**HD 147379,** mag. 8.90, 16 16 43.0 +67 14 20, has one planet in orbit. Also known as **HIP 79755**.
**HD 176693,** mag. 9.0, 18 59 09.0 +48 25 23, has one transiting planet. Also known as **Kepler-408**.
**HD 191939,** mag. 9.0, 20 08 06.0 +66 51 01, has three planets in orbit. Also known as **HIP 99175**.
**Struve (Σ) 2398,** is a binary star composed of two red dwarf stars (**HD 173739**, mag. 8.94 and **HD 173740**, mag. 9.70) at a separation of 15.3” (56 AU). Both stars are known sources of X-rays and are both flare stars. Located between **Omicron Draconis** (to the east) and the star **39 Draconis**. **HD 173739** is also known as **HIP 91768**, and **HD 173740** is also known as **HIP 91772**.

**The following are stars beyond magnitude 10 that are of interest:**

**There are 3 Kepler stars with one transiting planet each.**

**There is one Kepler star with two transiting planets.**

**There is one Kepler star with three transiting planets.**

**There is one WASP and one HAT-P star that has one transiting planet each.**

**GSC 03549-02811,** mag. 11.41, 19 07 14.04 +49 18 59.1, has one transiting planet (**TrES-2**)

**HD 238914,** mag. 12.0, 18 38 20.0 +59 15 14, has one planet in orbit. Also known as **HIP 91388**.

**Kepler-90,** mag. 14.0, 18 57 44.0 +49 18 19, has *eight* transiting planets.

**GD 356,** mag. 15.39, 16 40 57.16 +53 41 09.6, is a white dwarf star with emission lines.

**LP 71-82,** 18 02 16.60 +64 15 44.6, is a faint red dwarf star.

**The following is a list of stars in Draco:**

**26 Greek; 146 Lettered; 79 Numbered; 84Σ; 3 OΣΣ; 11 OΣ; 9 β; 1 Arg; 1 Hei; 1 Ku; 1 h; 7 Hu; 1 PO; 1 Kui; 3 A; 3 Stn; 50 ADS; 5 HI; 2 HII; 1 HIII; and 3 HIV; for a total of 438 stars.**

# *Sky Happenings: September 2022*

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

**Sept. 3rd -** **First Quarter Moon** occurs at 1:08 PM CDT,
Dusk: In the south-southwest, the first quarter **Moon** is about 5° to the left or upper left of **Antares**.

**Sept. 4th -** **Venus** passes 0.8° north of **Regulus** at 8 PM CDT.

**Sept.7th -** Morning: High in the east, **Mars** and **Aldebaran** are separated by around 4°,
Asteroid **Juno** is at opposition at 12 noon CDT,
The **Moon** is at perigee (226,485 miles or 304,492 km from **Earth**) at 1:19 PM CDT,
Evening: The waxing gibbous **Moon** is above the southern horizon about 7° to the lower right of **Saturn**.

**Sept. 8th -** The **Moon** passes 4° south of **Saturn** at 6 AM CDT,
**Mars** passes 4° north of **Aldebaran** at 8 PM CDT.

**Sept. 9th -** **Mercury** is stationary at 3 PM CDT,
Evening: The almost-full **Moon** is nearly midway between **Saturn** and **Jupiter** in the southeast.

**Sept. 10th -** **Full Moon** occurs at 4:59 AM CDT,
The **Moon** passes 3° south of **Neptune** at 2 PM CDT.

**Sept. 11th -** Morning: The **Moon** is less than 5° below **Jupiter** in the southwest,
The **Moon** passes 1.8° south of **Jupiter** at 10 AM CDT.

**Sept. 14th -** **Uranus** is 0.8° south of the **Moon** at 6 PM CDT.

**Sept.15th -** Evening: The **Moon**, rising in the east-northeast, is preceded by the **Pleiades** and trailed by **Mars**.

**Sept. 16th -** **Neptune** is at opposition at 5 PM CDT,
The **Moon** passes 4° north of **Mars** at 9 PM CDT.

**Sept. 17th -** **Last Quarter Moon** occurs at 4:52 PM CDT.

**Sept. 19th -** The **Moon** is at apogee (251,379 miles or 404,555 km from **Earth**) at 9:43 AM CDT.

**Sept. 20th -** **Pollux** is 1.9° north of the **Moon** at 3 AM CDT.

**Sept. 22nd -** The **Autumnal Equinox** occurs at 8:04 PM CDT. Autumn begins in the **Northern Hemisphere**.

**Sept. 23rd -** **Mercury** is in inferior conjunction at 2 AM CDT,
Dawn: The thin lunar crescent and **Regulus** are in the east-northeast with only 4.5° separating them.

**Sept.25th -** **New Moon** occurs at 4:55 PM CDT.

**Sept. 26th -** **Jupiter** is at opposition at 3 PM CDT,
All Night: **Jupiter**, at opposition, is at its closest to **Earth** since October of 1963, at a distance of about 591 million km or 367 million miles.

**Sept. 29th -** Dusk: The **Moon,** in **Scorpius**, is around 1.5° above **Antares** in the southwest sky.

# *Planets:*

**Mercury – Mercury** will hug the western horizon during the first two weeks of September, shining at magnitude 0.4 on the 1st and setting 50 minutes after the Sun. The planet will be 3° high at 8 PM local daylight time. By the 5th, the planet will dim to magnitude 0.6 and will drop to 3° altitude within 20 minutes of sunset. The planet will reach inferior conjunction on the 23rd.

**Venus – Venus,** the brilliant morning star at magnitude -3.9, is in the pre-dawn twilight in early to mid-September. At the beginning of the month the planet will precede the **Sun** by 70 minutes, and by month's end by just 30 minutes. The planet's elongation is diminishing, and the planet is only 9° from the **Sun** on the 18th. The planet will spend most of the month in **Leo**. The **Moon** will stand 9° above the planet on the morning of the 24th – look for them 25 minutes before sunrise. The planet will show off a full disk (99% illuminated) in a telescope with a 10" diameter disk.

**Mars – Mars** joins **Aldebaran** in **Taurus** in early September. The planet, at magnitude -0.2, will brighten to magnitude -0.6 by the 30th. **Aldebaran** and the planet will rise in the east just before local midnight, separated by about 5°. On the 8th, the planet will pass 4° due north of the star. At the end of the month, the planet will rise around 10 PM local time. The planet will move east through **Taurus** all month. Late in the month, the planet, **Aldebaran**, and **Betelgeuse** will form a triangle of brilliant red-hued objects. The best time to view the planet through a telescope is in the hour or two before dawn, when it is more than 60° high. The planet spans 10" and will grow to 12" through the month. The planet's phase at the beginning of the month is 85% and will grow to 88% by month's end.

**Jupiter – Jupiter** will reach opposition on September 26th in Pisces. The planet will rise soon after 8:30 PM local time on the 1st, and by sunset at the end of the month. The planet will be at magnitude -2.9 all month. Best viewing is a few hours on either side of local midnight. The planet's apparent diameter will reach a stunning 50" by late September.

**Saturn – Saturn** will appear in the southeast sky as darkness falls. In early September the planet is 20° high by 9 PM local time, glowing at magnitude 0.3 in western **Capricornus**. Around local midnight the planet will be 35° high in the southern sky. Telescopes will show the rings – the tilt of the rings will increase to 15° by month's end. The planet's disk will remain at 18" across the equator, with a polar diameter of 26.5". The rings span 42" across and only 10" across the minor axis. **Titan,** the planet's largest moon, is at magnitude 8.5. It will be north of the planet early on the 6th and 22nd, and due south of the planet on the 14th and 30th, and due east on the 25th. **Iapetus**, at 12th magnitude, will be at eastern elongation (9' due east of the planet) on the 15th.

**Uranus – Uranus** is in **Aries** all month, shining at magnitude 5.7 as it approaches opposition in November. The planet can be spotted (challenging) with binoculars. The planet will be 13° due north of **Menkar** (**Alpha Ceti**). The planet will show an aqua-hued 4" wide disk in telescopes.

**Neptune – Neptune** reaches opposition on September 16th and is consequently visible all night. The planet shines at magnitude 7.7 in northeast **Aquarius** and is within easy reach of binoculars. The planet can be found 5° due south of **Lambda Piscium**. View it in the late evening. A telescope will reveal the planet's dim bluish disk spanning only 2".

**Pluto – Pluto's** positions, in **Sagittarius** north-northeast of the star **HD 188667**, by my estimates, are as follows: On September 1st – about 1.3'; on the 5th – about 1.1'; on the 9th – about 0.9'; on the 13th – 0.6'; on the 17th – 0.5'; on the 21st – 0.3'; and on the 25th – 0.2'.

**Sun –** The **Autumnal Equinox** will occur at 8:04 PM CDT on September 22nd.

Moon – The favorable librations are **Byrd Crater** on the 8th; **Cusanus Crater** on the 9th,
**Mare Humboldtianum** on the 10th; and **Bailly Crater** on the 22nd.

Greatest North Declination is on the 19th (+27.3°)
South 6th (-27.1°)

Libration in Longitude: East Limb most exposed on the 13th (+6.4°)
West 1st (-5.3°) and the 27th (-4.5°)

Latitude: North Limb most exposed on the 8th (+6.6°)
South 22nd (-6.7°)

***Asteroids / Minor Planets –*** Asteroid **2 Pallas** – **Pallas's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On September 8th – 06 01.76 -09 19.3, at magnitude 9,0 in **Monoceros**; on the 18th – 06 16.95 -11 25.9, at magnitude 8.9 in **Canis Major**; and on the 28th – 06 30.95 -13 45.0, at magnitude 8.8 in **Canis Major**.

Asteroid **3 Juno** – **Juno's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA*** *Edition*, are as follows: On September 8th – 23 00.32 -04 09.2, at magnitude 7.9 in **Aquarius**; on the 18th – 22 53.02 -06 09.9, at magnitude 8.1 in **Aquarius**; and on the 28th – 22 46.64 -08 05.2, at magnitude 8.2 in **Aquarius**.

Asteroid **4 Vesta - Vesta's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On September 8th – 22 05.10 -21 54.7, at magnitude 6.1 in **Aquarius**; on the 18th – 21 58.28 -22 28.2, at magnitude 6.4 in **Aquarius**; and on the 28th – 21 54.03 -22 38.14, at magnitude 6.6 in **Capricornus**. **Vesta's** positions, ***by my estimates***, are as follows: On September 1st – about 7.2° east and a little north of **M30** or 7° south-southeast of **Kappa Capricorni**; on the 5th – about 6.2° east and a little north of **M30** or 6.4° southeast of **Kappa Capricorni**; on the 10th – about 5.4° east and a little north of **M30** or 6.3° southeast of **Kappa Capricorni**; on the 15th – about 4.5° and a touch north of **M30**; on the 20th – about 3.9° east and a touch north of **M30** or 6° south-southeast of **Kappa Capricorni**; on the 25th – about 3.4° east and a touch north of **M30** or 5.5° south-southeast of **Kappa Capricorni**; and on the 30th – about 3° east and a touch north of **M30** or 4.6° south-southeast of **Kappa Capricorni**.

Asteroid **324 Bamberga** – **Bamberga's** positions, according to the ***RASC Observer's Handbook***, ***2022 USA Edition***, are as follows: On September 18th – 03 41.37 +35 31.6, at magnitude 9.8 in **Perseus**; and on the 28th – 03 49.55 +37 39.0, at magnitude 9.6 in **Perseus**.

***Comets –*** Comet **73P/SchwassmannWachmann** – **73P's** positions, according to ***ALPO***, are as follows: On September 9th – 14 43.6 -23 09.6, at magnitude 11.3 in **Libra**; on the 19th – 15 35.8 -28 49.3, at magnitude 11.5 in **Libra**; and on the 29th – 16 34.7 -33 10.8, at magnitude 11.9 in **Scorpio**.

Comet **C/2017 K2** (**PANSTARRS**), an evening comet – **K2's** positions, according to ***ALPO***, are as follows: On September 9th – 15 55.4 -25 34.1, at magnitude 7.5 in **Scorpio**; on the 19th – 15 55.1 -28 54.3, at magnitude 7.5 in **Scorpio**; and on the 29th – 15 57.3 -32 08.3, at magnitude 7.5 in **Lupus**. **K2's** positions, ***by my estimates***, are as follows: On September 1st – about 0.8° southwest of **Delta Scorpii**; on the 5th – about 1° north and a little east of the star **1 Scorpii** or 2° north-northwest of **Pi Scorpii**; on the 10th – about 1° due west of **Pi Scorpii**; on the 15th – about 2° south and a little west of **Pi Scorpii** or 0.8° northeast of **Rho Scorpii**; on the 20th – about 0.8° southwest of **Rho Scorpii**; on the 25th – about 2.1° due south of **Rho Scorpii** (in **Lupus**) or 3.2° north-northeast of **Chi Lupi**; and on the 30th – about 1° due north of **Xi Lupi**.

Comet **C/2019 L3** (**Atlas**), an evening/morning comet – **L3's** positions, according to **ALPO**, are as follows: On September 9th – 09 13.8 -06 59.2, at magnitude 10.8 in **Hydra**; on the 19th – 09 22.4 -08 58.3, at magnitude 10.8 in **Hydra**; and on the 29th – 09 30.5 -11 01.3, at magnitude 10.9 in **Hydra**.

**C/2020 V2** (**ZTF**), a morning comet – **V2's** positions, according to ***ALPO***, are as follows: On September 9th – 10 29.0 +52 51.6, at magnitude 11.7 in **Ursa Major**; on the 19th – 10 36.4 +53 22.2, at magnitude 11.5 in **Ursa Major**; and on the 29th – 10 43.9 +54 13.8, at magnitude 11.3 in **Ursa Major**.

Comet **C/2021 P4** (**ATLAS**) can only be seen in the southern hemisphere – **P4's** positions, according to ***ALPO***, are as follows: On September 9th – 11 29.8 -17 28.2, at magnitude 10.5 in **Crater**; on the 19th – 11 52.6 -24 32.3, at magnitude 10.8 in **Crater**; and on the 29th – 12 16.8 -31 11.9, at magnitude 11.2 in **Hydra**.

Comet **C/2022 E3** (**ZTF**) – **E3's** positions, according to ***ALPO***, are as follows: On September 9th – 16 15.4 +31 22.3, at magnitude 12.6 in **Corona Borealis**; on the 19th – 16 05.1 +29 44.6, at magnitude 12.4 in **Corona Borealis**; and on the 29th – 15 58.1 +28 13.8, at magnitude 12.2 in **Corona Borealis**.

***Meteor Showers* — Major** (**Class I**) meteor showers – there are two active in September; the **Perseids**, active from July 14th through September 1st, peaked on August 13th; and the **Orionids**, active from September 26th through November 22nd.

**Minor** (**Class II**) meteor showers – there are four active in September; the **Aurigids**, active from August 26th through September 4th, peaks on September 1st with a maximum zenith hourly rate (mzhr) of 6; the **September Epsilon Persieds**, active from September 2nd through September 23rd, peaks on September 10th with a mzhr of

5; the **Southern Taurids**, active from September 23rd through November 12th, peaks on October 18th; and the **Epsilon Geminids**, active from September 27th through November 8th, peaks on October 19th.

There are no **Variable** (**Class III**) meteor showers active in September.

There are nine **Weak** (**Class IV**) meteor showers (with a mzhr of <2) active in September; the **Eta Eridanids**, active from July 10th through September 10th, peaked on August 6th; the **August Beta Piscids**, active from August 17th through September 8th, peaked on August 21st; the **Zeta Draconids**, active from August 12th through September 5th, peaked on August 26th; the **August Gamma Cepheids**, active from August 17th through September 6th, peaked on August 29th; the **Nu Eridanids**, active from August 31st through September 21st, peaks on September 11th; the **September Lyncids**, active from August 30th through September 20th, peaks on September 11th; the **Chi Cygnids**, active from September 8th through September 17th, peaks on September 13th; the **Daytime Sextanids**, active from September 22nd through October 13th, peaks on October 3rd; and the **Tau Cancrids**, active from September 23rd through November 12th, peaks on October 21st

.


## Draco – The Dragon

Coiled around the sky's North Pole is the celestial dragon, Draco. Legend has it that this is the dragon slain by Heracles during one of his labors, and in the sky the dragon is depicted with one foot of Heracles (in the form of the neighboring constellation Heracles) upon its head. This dragon, named Ladon, guarded the precious tree on which grew golden apples.

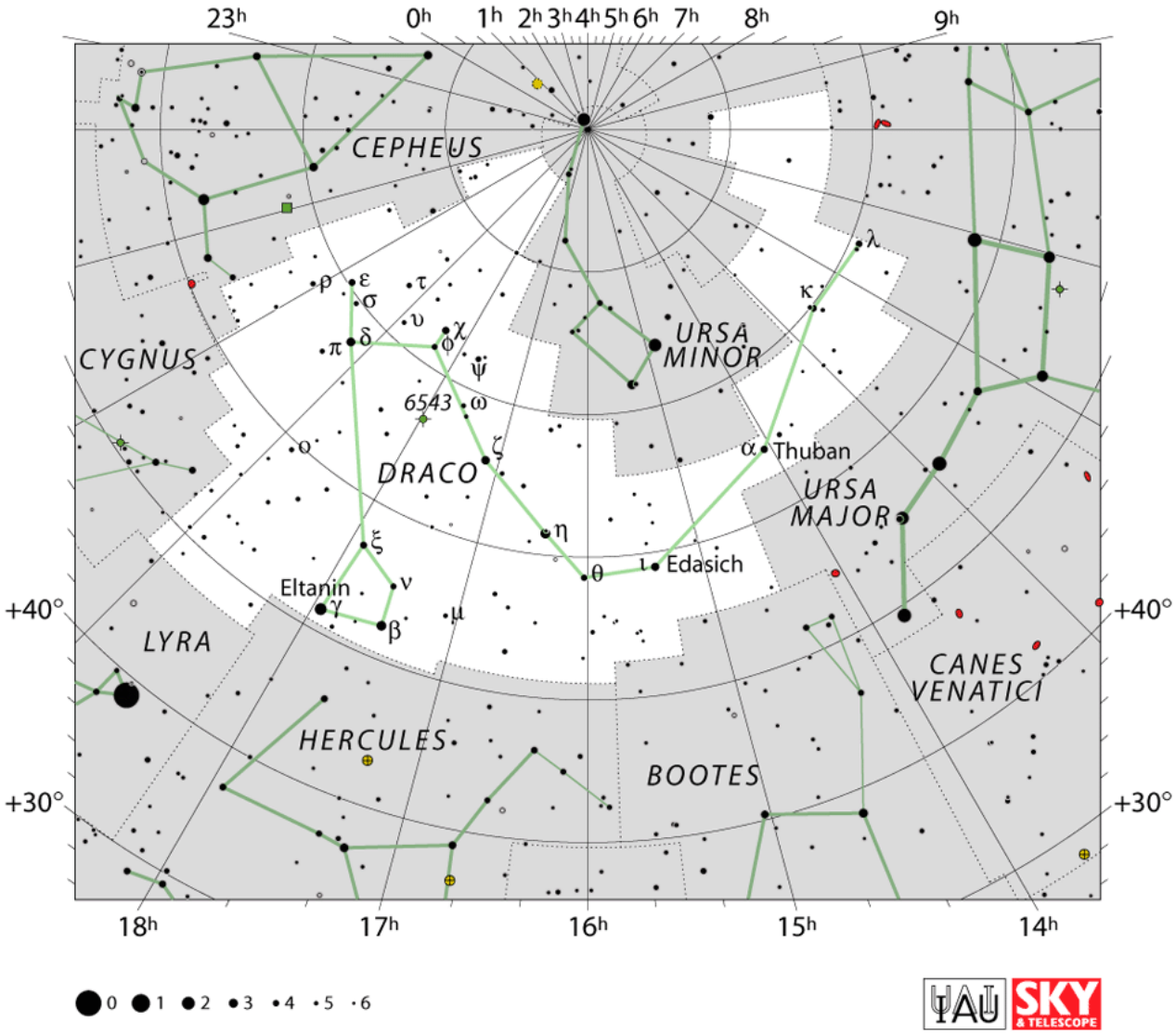
Hera had been given the golden apple tree as a wedding present when she married Zeus. She was so delighted with it that she planted it in her garden on the slopes of Mount Atlas and set the Hesperides, daughters of Atlas, to guard it. Most authorities say there were three Hesperides, but Apollodorus names four. They proved untrustworthy guards, for they kept picking the apples. Sterner measures were required, so Hera placed the dragon Ladon around the tree to ward of pilferers.

According to Apollodorus, Ladon was the offspring of the monster Typhon and Echidra, a creature half woman and half serpent. Ladon had one hundred heads, says Apollodorus, and could talk in different voices. Hesiod, though, says that the dragon was the offspring of the sea deities Phorcys and Ceto, and he does not mention the number of heads. In the sky, the dragon is shown with one head.

The great hero Heracles was required to steal some apples from the tree as one of his labors. He did so by killing the dragon with his poisoned arrows (reference Hydra). According to Apollonius Rhodius, the Argonauts came across the body of Ladon the day after Heracles had shot him. The dragon lay by the trunk of the apple tree, its tail still twitching, but the rest of its coiled body bereft of life. Flies died in the poison of its festering wounds while nearby the Hesperides bewailed the dragon's death, covering their golden heads with their white arms. Hera placed the image of the dragon in the sky as the constellation Draco.

There is a Greek legend that tells the story of Draco as a horrible dragon that guarded a sacred spring and slew the soldiers of Cadmus (the first king of Thebes), who had been sent to gather water. Cadmus then fought the dragon and won. After the dragon died, Athena appeared and told Cadmus to sow the ground with the creature's teeth. The teeth immediately sprang up as a

group of armed soldiers who helped Cadmus to found Thebes.




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<br>❑ Binocular<br>❑ Telescopic<br>❑ Moon<br>❑ Planets<br>❑ Solar<br>❑ Meteors/Comets<br>❑ Deep Sky<br>❑ No special interest/general viewing | ❑ Art/graphics and drawing<br>❑ Computers and Astronomy related programs<br>❑ Astrophotography/CCD imaging<br>❑ Radio Astronomy/shortwave<br>❑ Outreach/Sidewalk Astronomy (showing the sky to the public)<br>❑ Telescope Making<br>❑ Credentialling thru AL's stepped learning programs (earning badges and certificates)<br>❑ 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**