

Night Visions

August 2022

Newsletter of the **Baton Rouge** Astronomical Society

First image from James Webb Space Telescope looks back 4.6 billion years, entitled "Webb's First Deep Field"

Monthly Meeting August 8th at 7:00 PM, in person

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

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

PRESENTATION: TBA.

What's In This Issue?



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Outreach Report
Light Pollution Committee
Globe At Night
ALCON 2023



[Article: "Webb's Primary Imager – NIRCam"](#)

HRPO EVENTS

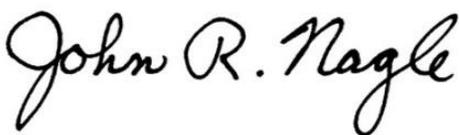
OBSERVING NOTES – Lyra – The Lyre

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

- The contract between AL and the hotel for ALCon 2023 should be signed soon, after working out a few more details. **ALCon 2023 committees will now go into “overdrive”**, because we have just under one year to prepare. We want ALCon 2023 to be a memorable occasion for all attendees and want to show off Louisiana and the astronomy community in this state. I will be asking members to volunteer on at least one committee – right now we have less than 15 members doing all the work. To sit in on our next online meeting and see where you might fit in (Sunday, August 14th, 7 PM) go <https://meet.jit.si/> **Click in the blank/choose BRASmeet from the dropdown menu.**
- The **volunteer badges** are in, and most have been given out. If you volunteer for outreach events and want a badge, see Ben about one. He will place one more order this year.
- All BRAS meetings are now in person at HRPO. Please note that the **LPC meeting has been moved** to 6 PM at HRPO at 6 p.m. before the membership meeting at 7 PM on the second Monday of the month. We ask that you be quiet and/or take all conversations outside while the LPC meeting is going on. Thank you for your consideration.
- The next **MOON** event is scheduled for Friday, August 19th, at 9 PM at HRPO. Come out, bring your telescope, and join everyone in observing.
- The **New Member Kit** is being developed, and will contain some BRAS Policies, a copy of the By-Laws, information about the BRAS Dark Site, and more. Send any ideas about what to include in the kits to president@brastro.org.
- I attended BREC's 75th Anniversary Party as a special guest, representing BRAS. We also had a booth outdoors under a canopy. I got the opportunity to talk to EBRP Mayor-President Sharon Weston Broome about ALCon 2023. She said to contact her office and that they would be happy to help us, so all things considered, it was a successful day.
- With the membership meetings being in person at HRPO, we have started the monthly raffles again. We are developing a Raffle Policy for both the monthly and large item raffles. This policy will be included in the New Member Kit.

Clear Skies, and Happy 4th



John Nagle, 2022 President

Upcoming BRAS Meetings:

Light Pollution Committee: NEW TIME thru December: 6 pm Monday, August 8th before the monthly meeting. (In person only, Open to the public), followed by . . .

Monthly Member Meeting – 7 pm Monday, August 8th at the Observatory, in person and via Jitsi

Monthly Business Meeting: 7 pm Wednesday, August 31st (Members Only), in person and via Jitsi

MOON (Members Only Observing Night) (Quarterly) August 19th, starting at 9 PM

ALCon 2023 (“Astronomical Gumbo”) Committee Meeting Sunday, August 14th, 7 PM online.



Monthly Meeting Minutes – July 11th, 2022, 7 p.m.

- Welcome by the president, John Nagle.
- Due to the unavailability of speakers, Coy spoke briefly about solar viewing, discussing the different filters and telescopes and best times to view the sun (between 7 and 8 am). He encouraged purchasing equipment for the 2024 eclipse now before it sells out.
- John gave the update on ALCON. The agreement between BRAS and the Astronomical League has been signed, so everything is official at this point. The agreement with the venue has not been signed, although it's anticipated that everything will be ironed out within the week. We're currently starting to set up speakers for the event. The Vatican astronomer has recommended someone to us. Pran, the astronomer from Kosovo, is definitely coming. The astronomer from North Carolina would like to come; he's looking for some compensation to help with expenses. This is also the case with the Canadian, Robert Dick, who has drafted light pollution laws in his country. Greg Andrew, an expert in dark matter, is also on board. There is a young lady from Shreveport who is attending Harvard; Coy thinks she would be good on a panel of young astronomers as well as Pranvera Hyseyeni (26 years old) who is at school at Santa Clara. Steven spoke about the contracts. He's still looking for volunteers to help out. The trip to LIGO is already set on the calendar for Wednesday, July 26th; they are looking for a possible second trip to take place so the executive committee can participate. This may be hard to swing as LIGO will be in the middle of a production run during this time period. Someone asked how the speakers were going to be paid; BRAS is responsible for this expense. Merrill is going to meet with everyone at the Sunday ALCON meeting to organize speaker acquisition.
- Craig discussed 2 things, coffee, and Starfish Prime which was a missile launched into space by the Americans on July 9, 1962, to test to see what would happen. Evidently this created auroras from New Zealand to Hawaii, knocked out radios, and shut off the streetlamps in Hawaii. The Russians did something similar to this the following October and wound up frying their underground grid.
- Scott C. was presented with the Galaxy Challenge and Sunspotter Awards by the Astronomical League.
- Upcoming outreaches are the BREC 75th Anniversary on the 16th at the Independence Park Theatre and the one at Forest Park on Tuesday the 19th. The Super Moon event will be at HRPO Wednesday, July 13th.

Three books were raffled off. Cookies were available.
Submitted by Roz Reddinger, Secretary

2022 Officers:

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Frederick Barnett



Business Meeting Minutes –July 27th, 2022, 7 p.m.

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

1. Discussed a computer camera, microphone, and cables to enable better communications when using an on-line conference/meeting platform.
2. Discussed magnetic cars signs (of BRAS Logo) for use at BRAS events – need a vector design – Krista will be providing one.
3. Volunteer Badges – Ben has a few more to distribute. He will make one more order for this year.
4. Raffles – a policy on raffles will be developed and included in the New Member Kit.
5. New Member Kits – working on them.
6. Library Telescope – decided to table idea until finances for ALCon 2023 are known.
7. BRAG (B.R. Astrophotography Group) – is there enough interest to restart it? Let us know if you are interested.
8. Working on “How to use the Observing Notes” from the Night Visions Newsletter.
9. Steven Tilley, Roz and Scott C, who were attending the ALCON 2022 in Albuquerque, signed onto the jitsi meeting just to say hello. They did a quick video pan around the hotel lounge where they were taking a break for “happy hour”.

New Business

1. A 2022 Survey of Members will be in the newsletter.
2. A proxy-vote form will be in the newsletter, on line, and at HRPO.

Members attending were: John N., Chris K. in person; Tray, Ben and Thomas online.

Submitted by John Nagle, as our Secretary was at ALCON 2022.





Outreach Report for July

Hi Everyone,

We had a couple of very nice events this past month. Of course, there was **the BREC 75th Birthday** celebration. Lots of people despite the heat and threatening clouds. Craig, Scott, Chris K. (for a little bit until he had to go open the HRPO), Chris R., John and myself were all on hand. We got in a little bit of solar viewing before clouds came rolling in, (Funny thing, all the attendees seemed happy to see the Sun go away. We were the only ones upset about it!) and our demos were a hit, as usual.

Our other event was at one of the **BREC camps at the Forest Community Park**. We were impressed with the kids at that one. A lot of great questions and several knowledgeable kids kept the day lively. We even got to do some good solar observing. It's great to have some good sunspots back again for these daytime events. Scott, Troy and myself handled the duties for this one.

Coming up, we have a couple of last minute adds. Hopefully we'll be able to get to both of them. Please see below and let me know ASAP if you'd like to help out!

I hope the rest of the Summer goes well for y'all. Soon, Summer will be over and we'll be ready to start up our Sidewalk Astronomy at Perkins Rowe again. Can't wait!

Upcoming Outreach Events

Friday, August 5th

3pm-6pm
Big Buddy Program Total Teen Takeover
Louisiana Resource Center for Educators (5550 Florida Blvd)
2 or 3 people to assist with short (30 minutes or less) demos/presentations as the kids cycle through in small groups.

Sunday, August 7th

1pm-5pm
Louisiana Art and Science Museum
4+ people for demos and such (solar viewing if possible). Many people expected at the event as this is the FREE Sunday at the Museum.

Clear Skies, Ben Toman



BREC's 75th Birthday Bash: 1) Scott, Craig, John, Chris R. and Ben pose before our booth. 2.) Our setup is obscured by a bunch of people interested in the Cosmos.



Talk, Talk, Talk - The kids were fully engaged learning about gravity at the Forest Community Park outreach event!



LPC (Light Pollution Committee) Report

(NEW SCHEDULE thru December

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

There was no Quorum present for the meeting. The next meeting will be on August 8th, 6 PM at HRPO before the membership meeting at 7 PM. We ask that any/all conversations take place outside while the meeting is taking place.

Globe At Night

The target for the Globe at Night program is
Hercules from August 18th through August 27th

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.

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 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 meeting: Sunday, August 14, 2022, 7 PM 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 steveareno225@gmail.com.



**2023
ASTRONOMICAL
LEAGUE
CONVENTION**



★ FIRST TIME IN LOUISIANA! ★
Join us for this unique and exciting amateur astronomy gathering!

BREAKOUT SESSIONS:	FIELD TRIPS:
★ telescope purchasing and collimation	★ LASM
★ light pollution	★ LIGO
★ filters and photography	★ LSU P&A
★ outreach	★ HRPO

KEYNOTE SPEAKERS: TBD

ALCon 2023
★ JULY 26-29, 2023 ★
Hilton Baton Rouge Capitol Center Hotel
201 Lafayette Street, Baton Rouge, LA 70801

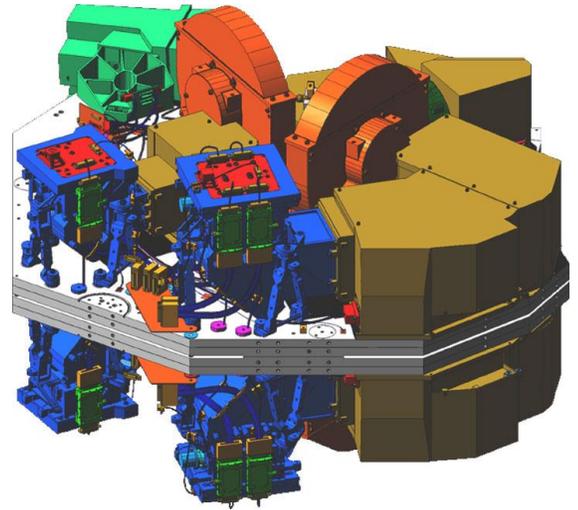
Registrations beginning TBD

brastro.org ★ public_relations@brastro.org ★ (225) 768-9948
Brought to Baton Rouge by the Baton Rouge Astronomical Society

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

T **WEBB'S PRIMARY IMAGER - NIRCAM**

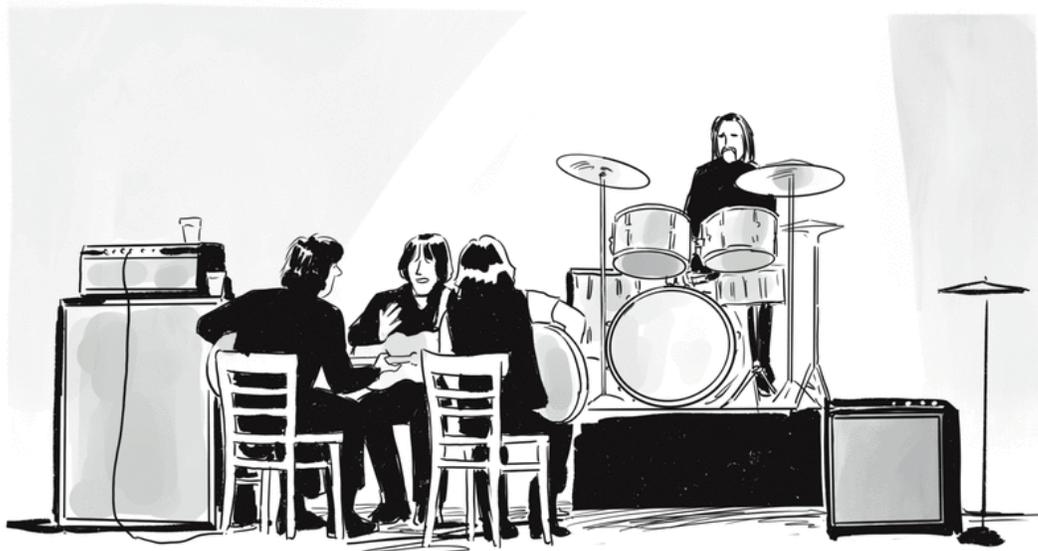
The Near Infrared Camera (NIRCam) is Webb's primary imager that will cover the infrared wavelength range 0.6 to 5 microns. NIRCam will detect light from: the earliest stars and galaxies in the process of formation, the population of stars in nearby galaxies, as well as young stars in the Milky Way and Kuiper Belt objects. NIRCam is equipped with coronagraphs, instruments that allow astronomers to take pictures of very faint objects around a central bright object, like stellar systems.



NIRCam's coronagraphs work by blocking a brighter object's light, making it possible to view the dimmer object nearby - just like shielding the sun from your eyes with an upraised hand can allow you to focus on the view in front of you. With the coronagraphs, astronomers hope to determine the characteristics of planets orbiting nearby stars.

Here's a really cool 3D video of the camera, along with the rest of the article above.

[Near Infrared Camera \(NIRCam\) Instrument Webb/NASA](#)



“Come on lads, we’ve been working on the album for a week and all we’ve figured out is the grand unified theory of the universe.”



Messages from HRPO

Highland Road Park Observatory



FRIDAY NIGHT LECTURE SERIES

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

5 August: "Curiosity on Mars" And curiosity was satisfied and piqued simultaneously! On 5 August 2012 the [Mars Science Laboratory](#) touched down in Gale Crater.

26 August: "The Fall Zodiac" This is an abridged version of the legendary cycle of lectures given here at HRPO over a decade ago. Aquarius...Pisces...Aries...



EVENING SKY VIEWING

No admission fee. For all ages.

Friday (5 and 26 August) from 8:30pm to 10pm

Saturdays (6, 20 and 27 August) 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.

6 August = "Surveying the Earth" Study of the big triumvirate concludes. Cadets will learn how precious our home is, and why it may cease to be humanity's only home.

20 August = "Saturn" Cadets [will investigate the data sent back by Voyager and Cassini, and get a list of viewing dates for the ringed beauty.](#)

27 August = "Soaring on the Space Shuttle V" Cadets have heard the tales of the launch system that brought satellites and experiments into orbit. This is the fifth in a long series of sessions bringing that glorious time alive, with never-before-seen activities!



PERSEID METEOR SHOWER

Friday 12 August from 10pm to 2am / No admission fee; for all ages.

Visitors must adhere to all rules.

The Perseids are one of the major meteor showers of the year, caused by debris left from the passings of Comet Swift-Tuttle. Come learn about meteors and let's see if we can spot some "earthgrazers". Although telescopes aren't needed for the Perseids, we'll have a telescope available from until midnight for leisurely gazing at other celestial objects. But look fast for the meteors; Perseid meteoroids hit our atmosphere traveling about sixty kilometers a second! If you're lucky, you may see a fireball...



PLUS NIGHT: "The Ringed Beauty"

Saturday 13 August 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-dependent).

*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.



SATURNIAN OPPOSITION

Sunday 14 August from 10:30pm to 12:30am

No admission fee; for all ages.

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



STEM EXPANSION: "Maritime Mysteries"

Saturday 20 August 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 27 August 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.

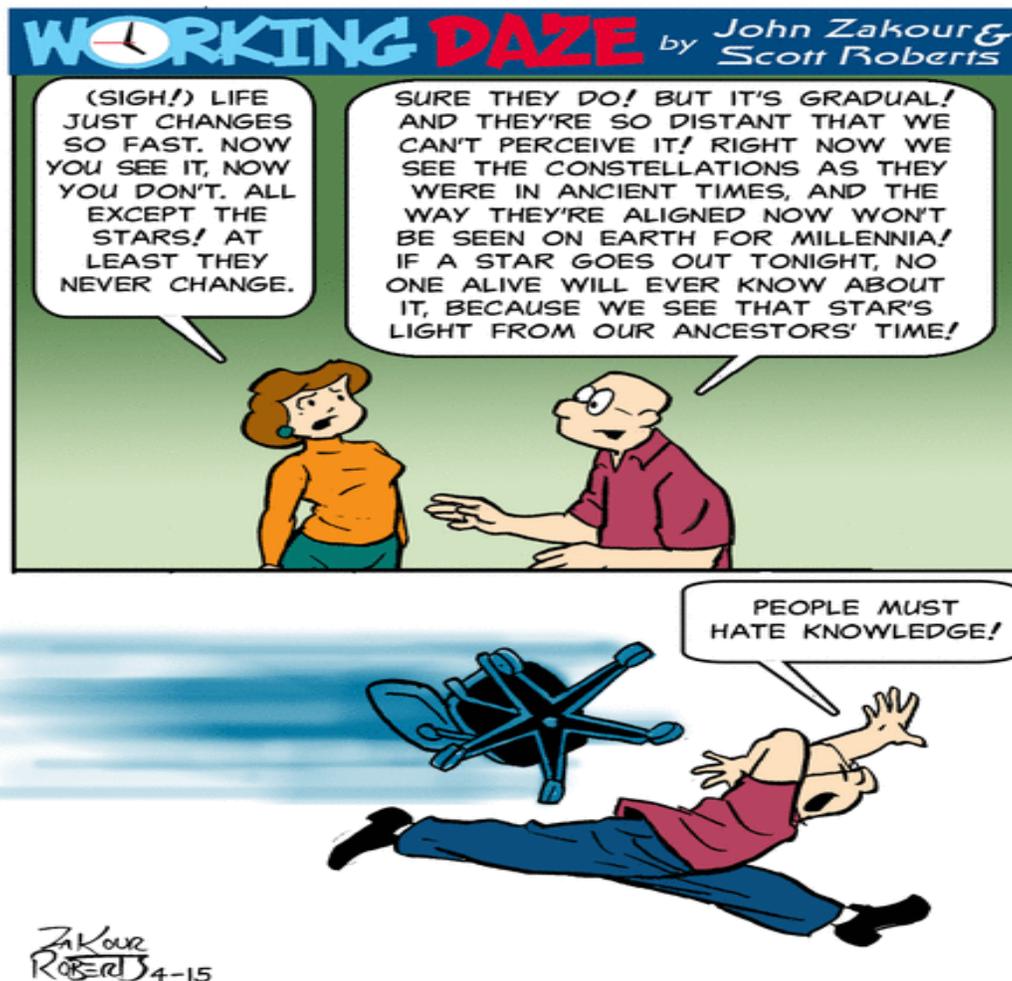


MERCURIAN ELONGATION

Monday 29 August from 6:45pm to 8:15pm

No admission fee; for all ages.

Periodically Mercury reaches its greatest angular separation in the sky (elongation) from the Sun. This is the safest way to view Mercury by amateurs. Come join us at the Burbank Soccer Complex! The planet will appear as a “half-Mercury”.





OBSERVING NOTES **AUGUST**

Lyra – The Lyre **Position: RA 19, Dec. +40°**

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.

Named Stars

Vega (Alpha Lyr), originally **Wega**, from the Arabic “Al-naṣr al-waḳī”, “the swooping stone eagle” or “the swooping vulture”, also called “The Harp Star”, **Fidis**, **Vulture Cadens**, from the **Babylonian – Dilgan – The Messenger of Light**, and from the **Akkadian – Tir-anna – Life of Heaven**, mag. 0.003, 18 36 56.19 +38 46 58.8, is a blue-white main sequence dwarf star, the second most bright star in the northern hemisphere, and the fifth brightest star in the night sky. It was the first star other than the **Sun** to be photographed (1850), and the first star to have its spectrum recorded. It is believed to be 455 million years old, a variable star, a rapid rotator with a projected rotational rate of 274 km/second at the equator. It is the first single main sequence star other than the **Sun** to be known to emit X-rays and is surrounded by a circumstellar debris disk similar to the **Kuiper Belt**. This star forms one corner of the famous **Summer Triangle** asterism (along with **Altair** and **Deneb**). It also forms one vertex of a much smaller triangle with **Epsilon** and **Zeta Lyrae**. Also known as **HD 172167**, **HIP 91262**, **ADS 11510**, **WDS 18369+3846**, **HV 39**, and **3 Lyrae**.

Sheliak (Beta Lyr), from the Arabic “Al Shilyäk”, “The Tortoise”, also called **Shelyak**, and **Shiliak**, mag. 3.52, 18 50 04.79 +33 21 45.6, is a multi-star system. **Beta A**, a blue giant star, is a spectroscopic binary with a period of 12.9414 days (and they periodically eclipse each other). **B star** is magnitude 8.6, separation of 45.7” at PA 149°; **C star** is magnitude 13.0, at a separation of 46.6” at PA 248°; **D star** is magnitude 13.0, at a separation of 46.6 at PA 248; **E star** is magnitude 9.9, at a separation of 66.9” at PA 318°; and **F star** is magnitude 9.9, at a separation of 85.9” at PA 19°. **Beta B Lyrae**, mag. 7.20, 15 50 06.60 +33 21 05.0. **Beta A Lyrae** is also known as **HD 174638**, **HIP 92420**, **ADS 11745**, **WDS 18501+3322**, **HV 3**, **ΣA 39**, and **10 Lyrae**. **Beta B Lyrae** is also known as **HD 174664**.

Sulafat (Gamma Lyr), from the Arabic “al-sulhafät”, “The Turtle”, also called **Sulaphat**, and **Jugum**, mag. 3.25, 18 58 56.62 +32 41 22.4, is a blue-white giant star with two companion stars. The companions, a 10th magnitude star at a separation of 177”, and a 12th magnitude star, are optical only companions. **Beta Lyrae** is 1.7° to the west and slightly north, and the **Ring Nebula (M57)** is between **Gamma** and **Beta Lyrae** (somewhat closer to **Beta Lyrae**). Also known as **HD 176437**, **HIP 93194**, and **14 Lyrae**.

Aladfar (Eta Lyr), meaning “talons”, mag. 4.43, 19 13 45.49 +39 08 45.5, is a blue sub-giant variable star, with a companion at magnitude 9.1, and a separation of 28.1” at a Pa of 82°. Also known as **HD 180163**, **HIP 94481**, **ADS 12197**, **WDS 19138+3909**, **HIV 2**, **Σ24897**, and **20 Lyrae**.

Alathfar (Mu Lyr), from the Arabic “Al Athfär”, “the talons (of the falling eagle)” also **al-uzfar**, mag. 5.11, 18 24 13.80 +39 30 26.1, is a white sub-giant star. Also known as **HD 169702**,

HIP 90191, and **2 Lyrae**.

Xihe (HD 173416), mag. 6.06, 18 43 36.11 +36 33 23.8, has one planet in orbit. Also known as **HIP 91852**.

Chason (HAT-P-5), mag. 11.95, 18 17 37.30 +36 37 16.9, has one transiting planet.

Deep Sky:

M56 (NGC 6779), mag. 8.2, 19 16 36 +30 11, 7' in size, is a globular cluster with a low concentration of stars; large, bright, and very well resolved at high power. This globular cluster has no bright core but does have a delicate spherical halo. To locate **M56**, move 2.5° south and 4.5° east of **M57**, or, from **Albireo (Beta Cygni)** move 2° north and 3° west. **M56** lies 20' southeast from a magnitude 5.5 star.

M57, (NGC 6720), “Ring Nebula”, “Smoke Ring Nebula”, “Donut Nebula”, mag. 8.8, 18 53 36 +33 02, 80'x60' in size, is a planetary nebula; pretty large; irregular ring structure; a very impressive and stunning object; photo magnitude 9.7. A 4-inch telescope will bring out the annular shape. The very blue central star, at magnitude 15.2, is difficult to see. Located almost half-way between **Beta** and **Gamma Lyrae**. Also known as **IRAS 18517-3257, PK 63+13.1, and PNG 63.1+13.9**.

Steph 1, “The Delta Lyrae Cluster”, mag. 3.8, 18 54 30 +36 54, 20' in size, is an open cluster of 15 stars; detached, no concentration of stars; large brightness range; magnitude of brightest star is 4.3.

NGC 6743, mag. 8.2, 19 02 03 +29 18 14, is a cluster poor in stars; pretty large; magnitudes range from 11 to 12. An Asterism!

NGC 6791, mag. 9.5, 19 21 32 +37 48 21, 16' in size, 300 stars, brightest star is magnitude 13.0, is an open cluster containing three age groups of stars: 4 billion years old white dwarf stars; 6 billion years old white dwarf stars; and 8 billion years old normal stars.

NGC 6745, “Bird’s Head Galaxy”, mag. 12.3, 19 01 42 +40 45, 1.3'x0.5' in size, is a triple system believed to be 10 billion years old. Also known as **UGC 11391, PGC 62691, C229-013, KTG 69, C1900.0+4041, and IRAS 1900.0+4040**.

GRB 050525A, is a gamma-ray burst that flared in 2005, and its after-glow re-brightened at 33 minutes after the original burst – this is only the third GRB found to exhibit such an effect. Light curves observed over the next 100 days was consistent with that of a super nova or even a hyper-nova and was dubbed SN2005nc.

Asterisms:

Al Naṣr al Wāḳī', “The Swooping Stone Eagle of the Desert” consists of **Alpha, Epsilon, and Zeta Lyrae**.

Chih Neu, from the Chinese for “The Spinning Damsel” or “The Weaving Sister” consists of **Epsilon Alpha, and Zeta Lyrae**.

Abhijit – “Victorious” consists of **Epsilon, Alpha, and Zeta Lyrae**.

Athāfiyy, from the Arabic for “of the people” consists of **Epsilon, Alpha, and Zeta Lyrae**.

Tsan Tae, Chinese, consists of Beta, Delta, and Iota Lyrae.

Lēen Taou, Chinese, “Paths Within the Palace Grounds” consists of **Eta and Theta Lyrae**.

Debilissima, “Excessively Minute” is the three stars between the **Double-Double**.

Deep Sky Objects in Lyre: 2 Messier; 33 NGC; 4 IC; 75 UGC; 6 PNG; 5 Radio galaxies; 2 Sh; 1 h; 55 MCG; 28 C; 25 C; 2 K; 7 PK; 1 ZwG; 1 M; 1 Abell; 1 Steph; 1 Ho; 1 ASCC; 1 Sal; 1 Sp; 1 Str; 1 Ling; 26 PGC; 16 IRAS; 2 KAZ; 2 KIG; 1 OCL; 4 NPM1G; 1 2MASX; 2 CGMW; 1 LGG; 1 B2; 1 NVSS; and 20 Herschel for a total of 330 objects.

Other Stars:

Epsilon Lyrae, The Double-Double Star, is a wide binary system with both components being themselves close binary stars, with a faint star orbiting as component C, for a total of 5 stars in the system. **Epsilon¹ Lyrae A**, mag. 4.67 (A component is mag. 5.4, B component is mag. 6.5, separation of 2.6” at a PA of 357°), 18 44 20.34 +39 40 11.9; **Epsilon² Lyrae A**, mag. 4.6 (C component is mag. 5.1, D component is mag. 5.3, separation of 2.3” at a PA of 94°), 18 44 22.78 +39 36 45.3, with

the AB-CD separation of 207.7" at a PA of 173°. **Epsilon² Lyrae B**, mag. 5.37, 18 44 22.90 +39 36 46.0. **Epsilon¹ Lyrae A** is also known as **HD 173582**, **HIP 91919**, **ADS 11635**, **H 115**, **Σ2382**, and **4 Lyrae**. **Epsilon² Lyrae A** is also known as **HD 173607**, **HIP 91926**, **ADS 11635**, **WDS18443+3940**, **H 116**, **Σ 2383**, and **5 Lyrae**. **Epsilon² Lyrae B** is also known as **HD 173608**, and **5 Lyrae**.

HD 176051, mag. 5.20, 18 57 01.47 +32 54 05.8, is a low-mass binary star with a high-mass planet in orbit. Also known as **HIP 93017**.

Iota Lyrae, mag. 5.25, 19 07 18.13 +36 06 00.6, is a Be class star. Also known as **HD 178475**, **HIP 93903**, and **18 Lyrae**.

Gliese 758, mag. 6.37, 19 23 34.01 +33 13 19.1, is a yellow dwarf star with a brown dwarf companion, the coldest star to have been imaged, around a sun like star, in thermal light in 2009. Also known as **HIP 95319**.

HD 180314, mag. 6.61, 19 14 50.21 +31 51 37.3, has one unconfirmed planet in orbit. Also known as **HIP 94576**.

HD 178911, mag. 6.74, 19 09 04.38 +34 36 01.6, is a triple star system consisting of a close binary - a visually separable sun-like star secondary with one planet in orbit. This is the second planet found in a triple star system. Also known as **HIP 94076**.

HD 181068, mag. 7.09, 19 17 08.98 +41 15 53.3, is a triply eclipsing binary system. Also known as **HIP 94780**.

HD 177830, mag. 7.18, 19 05 20.77 +25 55 14.4, is an orange sub-giant star that has two planets in orbit. A Jovian mass planet is in an eccentric orbit with a period of 390 days. The second planet, closer to the star, was discovered in 2011. Also known as **HIP 93746**.

HD 175370, mag. 7.19, 18 53 00.0 +43 42 49, has one planet in orbit. Also known as **HIP 92668**.

Kepler-444, mag. 9.0, 19 19 01 +41 38 05, has five transiting planets in orbit.

Kepler-37, mag. 9.77, 18 58 23.1 +44 31 05, has three planets in orbit, and at the time of discovery of the first planet in February of 2013, it was the smallest known exo-planet.

Stars of interest beyond magnitude 10:

Kepler-65, mag. 11.018, 19 14 45.3 +41 09 04.2, has four transiting planets in orbit.

Kepler-102, mag. 11.49, 18 45 55.9 +47 12 29, has five transiting planets in orbit.

Kepler-20, mag. 12.5, 19 10 48.0 +42 20 19, has six transiting planets in orbit.

Kepler-62, mag. 13.75, 18 52 51.0 +45 20 59.4, has five transiting planets in orbit.

Kepler-282, mag. 15.2, 18 58 43.0 +44 47 51, has four transiting planets in orbit.

Kepler-26, mag. 16.0, 18 59 46 +46 34 00, has four transiting planets in orbit.

Kepler-55, mag. 16.3, 19 00 40.0 +44 01 35, has five transiting planets in orbit.

2MASS 1835+3259, mag. 18.27, 18 35 39.90 +32 59 54.6, is a brown dwarf star.

WISE 1828+2650, 18 28 31.08 +26 50 37.8, is a brown dwarf star.

WISEP J190648.47 +401106.8, 19 06 48.47 +40 11 06.8, is a brown dwarf star.

Beyond magnitude 10 not listed here are the following:

Nine stars with one planet in orbit or transiting.

Six stars with two planets in orbit or transiting.

Five stars with three planets in orbit or transiting.

Total planet count for the Lyre Constellation is 64.

Stars in Lyre are as follows: 17 Greek; 21 Numbered; 39 Variable; 37 Alpha; 45 Σ; 1 ΣI; 1 ΣA; 5 OΣ; 5 β; 5 Ho; 2 Sh; 4 SHJ; 1 Bu; 1 Hu; 3 h; and 1 Es for a total of 188.

Sky Happenings: August, 2022

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

- Aug. 1st** - **Mars** passes 1.4° south of **Uranus** at 4 AM CDT,
Dawn: **Venus**, **Mars**, **Jupiter**, and **Saturn** will be in a long line stretching from the east to the southwest.
- Aug. 3rd** - Dusk: In the southwest the waxing crescent **Moon** is 3° above **Spica**.
- Aug. 4th** - **Mercury** passes 0.7° north of **Regulus** at 12 midnight CDT.
- Aug. 5th** - **First Quarter Moon** occurs at 6:07 AM CDT.
- Aug. 6th** - The **Moon**, one day past 1st quarter, is in **Scorpius** at about 4.5° to the right or upper right of **Antares**.
- Aug. 7th** - **Venus** passes 7° south of **Pollux** at 5 AM CDT.
- Aug. 8th** - Double shadow transit on **Jupiter** will start at 8:30 PM CDT.
- Aug. 10th** - The **Moon** is at perigee (223,587 miles or 359,828 km from **Earth**) at 12:09 PM CDT.
- Aug. 11th** - **Full Moon** occurs at 8:36 PM CDT,
Evening: The full **Moon** and **Saturn**, on the southeast horizon, are 5° apart, after twilight ends,
The **Moon** passes 4° south at 11 PM CDT.
- Aug. 12th/13th** All Night: **Perseid Meteor Shower** peaks at about 8 PM CDT – the just past full **Moon** will wash out all but the brightest meteors.
- Aug. 14th** - The **Moon** passes 3° south of **Neptune** at 5 AM CDT,
Saturn is at opposition at 12 noon CDT – it will be visible all night.
- Aug. 15th** - The **Moon** passes 1.9° south of **Jupiter** at 5 AM CDT, high above the southern horizon,
Double shadow transit on **Jupiter** starts at 10:59 PM CDT.
- Aug. 18th** - Dawn: **Venus** and the **Beehive Cluster (M44)** rise together in the east-northeast,
The **Moon** passes 0.6° north of **Uranus** at 10 AM CDT,
Last Quarter Moon occurs at 11:36 PM CDT.
- Aug. 19th** - Morning: The last-quarter **Moon**, **Mars**, and the **Pleiades** are in a group spanning less than 6° above the eastern horizon in the early hours of the morning,
The **Moon** passes 3° north of **Mars** at 7 AM CDT.
- Aug. 20th** - Morning: In the east, the waning crescent **Moon** is some 7° from **Aldebaran**, with the **Pleiades** and Mars nearby at the upper right.
- Aug. 22nd** - Asteroid **Vesta** is at opposition at 2 PM CDT,
The **Moon** is at apogee (251,915 miles or 405,418 km from **Earth**) at 4:52 PM CDT.
- Aug. 23rd** - Dawn: The **Moon**, in **Gemini**, will form a triangle with **Castor** and **Pollux** in the east-northeast before sunrise.
- Aug. 24th** - Dawn: The thin lunar crescent is now 6° below **Pollux**, with **Castor** above the pair,
Uranus is stationary at 10 AM CDT.
- Aug. 25th** - Dawn: The very thin crescent **Moon** will shepherd **Venus** as they rise above the east-northeast horizon at about 6° apart,
The **Moon** passes 0.7° south of dwarf planet Ceres at 2 PM CDT,
The **Moon** passes 4° north of **Venus** at 4 PM CDT.
- Aug. 27th** - **New Moon** occurs at 3:17 AM CDT (lunation 1233),
Mercury is at greatest eastern elongation (27°) at 11 AM CDT.
- Aug. 29th** - The **Moon** passes 7° north of **Mercury** at 6 AM CDT.
- Aug. 30th** - Morning: **Mars** is halfway between **Aldebaran** and the **Pleiades** in the east.

Planets:

Mercury – **Mercury** will hug the western horizon all month. On August 3rd, soon after sunset, the planet will be only 0.8° north of **Regulus** – the pair will set one hour after the **Sun**. The planet, at magnitude -0.5, will be only 4° high. By the 14th, the planet's magnitude will be 0.0, and will stand 5° high due west 30 minutes after sunset. The planet reaches greatest eastern elongation (27°) on the 27th – and has faded to

magnitude 0.3. On the 28th, the planet will be 9.5° to the left of the **Moon**, and below the **Moon** on the 29th. **Venus** – **Venus** is a brilliant morning star, at magnitude -3.9, all month. On August 1st, the planet rises in **Gemini** two hours before the **Sun**. The planet will cross into **Cancer** on the 10th, and by the 17th it will stand just under 1° west of **M44 (Beehive Cluster)**. The pair will rise 1.5 hours before the **Sun**. The waning crescent **Moon** is 6.5° northwest of the planet on the 25th before sunrise. Through a telescope, the planet will change from a 93% illuminated disk spanning 11" on the 1st to a 97% illuminated disk spanning 10" across on the 31st.

Mars – **Mars** and **Uranus** will rise together in **Aries** soon after midnight local time on August 1st with **Mars** at magnitude 0.2 and **Uranus**, 1.4° north of **Mars**, will be at magnitude 5.8. **Mars** will move eastward and will cross into **Taurus**, where it will remain for the rest of the month, on the 9th. The planet will be 6° south of the **Pleiades** between the 16th and the 19th. On the 19th, the last-quarter **Moon** will be less than 3° from the planet – the **Moon** will be between the planet and the **Pleiades** at around 2 AM CDT when it will be less than 2° from the planet and about 3° from **Alcyone**. On the 31st, the planet will stand 5.7° northwest of **Aldebaran**. The planet will grow in apparent size from 8" to 11" during this month.

Jupiter – **Jupiter** is in northwest **Cetus** and will rise an hour before midnight on August 1st, and soon before 9 PM local time on the 31st. The planet is at magnitude -2.7 most of the month and will reach magnitude -2.8 in the last week of the month, with its apparent diameter spanning 49". The planet lies due south at 53° altitude by 5 AM local time on the 1st, and by 3 AM on the 31st. On the morning of the 15th, the waning gibbous **Moon** is only 2° to the below left of the planet. The two will be slightly more than 1.5° apart at 8 AM CDT – can you see them? There are two double shadow transits on **Jupiter** this month. The first, on the 8th, will begin with **Ganymede's** shadow starting ingress at 6:57 PM CDT, followed by **Io's** shadow ingress at 8:30 PM CDT. **Io** will ingress at 9:36 PM CDT, with **Ganymede's** shadow egress at 9:57 PM CDT. **Io's** shadow will egress at 11:47 PM CDT, with **Ganymede** egress at 2:08 AM CDT. The second double shadow transit begins on the 15th with **Io's** shadow's ingress at 10:24 PM CDT, and **Ganymede's** shadow will ingress at 10:59 PM. **Io** will ingress at 11:23 PM CDT, and its shadow will egress at 12:38 AM CDT on the 16th. **Io** will egress at 1:35 AM CDT, with **Ganymede's** shadow will egress at 1:58 AM CDT. **Ganymede** will start ingress at 3:10 AM CDT and will egress at 5:40 AM CDT.

Saturn – **Saturn** will rise in the east soon before 9 PM local time on August 1st. **Saturn** will reach opposition on the 14th and will be visible all night. Best to view when it is highest in the southern sky around 12 midnight local time. The planet will brighten to magnitude 0.2 at mid-month and is the brightest object in **Capricornus**. As August opens, **Deneb Algedi (Delta Capricorni)** is 1.7° southeast of the planet. The planet's retrograde motion wanders westward at about 0.5° per week. On the night of the 11th/12th, the full **Moon** will be within 5° of Saturn shortly before the **Perseid Meteor Shower** peaks. The planet's disk will span 19" across the equator with the rings spanning 43" across. On the 14th, the planet is at opposition, at 74 light minutes (8.857 AU) from **Earth**, at magnitude 0.3, with the northern side of the ring plane exposed at a 13° tilt. **Titan**, the planet's largest moon, will be north of the planet on the 5th and the 21st, and due south of the planet on the 13th and 29th. **Iapetus** is brightest (12th magnitude) on the 7th when it reaches western elongation (9° west of the planet) and will move into superior conjunction on the 27th for US observers – it will be occulted. **Iapetus** lies just above the rings and will begin to disappear at around 11:25 AM CDT on the 26th.

Uranus – **Uranus**, at magnitude 5.8, will rise together with **Mars** on August 1st in **Aries**, and it will be 1.4° north of **Mars**. **Uranus** will show a 4"-wide featureless disk. A last quarter **Moon** will be within 4° of the planet on the morning of the 18th. The planet will reach its first stationary point on the 24th.

Neptune – **Neptune** starts the month in southwest **Pisces**, due south of **Lambda Piscium**, at magnitude 7.7. The planet will rise above 35° altitude in the southeastern sky a couple hours after midnight. The planet's motion will carry it westward. A telescope will reveal the planet's dim bluish disk, spanning a mere 2". The planet will reach opposition on September 16th.

Pluto – **Pluto** will be at the following positions in **Sagittarius**: On August 1st – about 0.15° due north and a touch east of the star **SAO 188737**; on the 5th – about 0.13° north-northwest of the star **SAO 188737**; on the 10th – about 0.18° northwest of the star **SAO 188737**, or 0.25° north-northeast of the star **SAO 188701**; on the 15th – about 0.15° north-northeast of the star **SAO 188701**; and on the 20th – about 0.06° northeast of the star **SAO 188701**. The star **SAO 188737** (magnitude 7.8) is 3° north of **Tau Sagittarii**, and the star **SAO 188701** is just under 0.4° due west of the star **SAO 188737**.

Moon – The Moon, on August 18th, will pass 0.6° north of Uranus at 10 AM CDT. The Moon passes 0.7° south of dwarf planet Ceres at 2 PM CDT.

Favorable Librations: Poncelet Crater on August 10th; De Sitter Crater on August 11th; Hayn F Crater on August 12th; and Hausen Crater on August 26th.

Greatest North declination on the 23rd (+27.0°)

Greatest South declination on the 9th (-27.0°)

Libration in Longitude: East limb most exposed on the 16th (+7.3°)

West limb most exposed on the 4th (-6.6°)

Libration in Latitude: North limb most exposed on the 12th (+6.5°)

South limb most exposed on the 26th (-6.6°)

Asteroids / Minor Planets Asteroid **2 Pallas** – Pallas’s positions, according to the *RASC Observer’s Handbook, 2022 USA Edition*, are as follows: On August 9th – 05 11.39 -04 26.1, at magnitude 9.3 in **Monoceros**; on the 19th – 05 28.79 -05 48.8, at magnitude 9.2 in **Monoceros**; and on the 29th – 05 45.84 -07 26.7, at magnitude 9.1 in **Monoceros**.

Asteroid **3 Juno** – Juno’s positions, according to the *RASC Observer’s Handbook, 2022 USA Edition*, are as follows: On August 9th – 23 17.22 +00 39.7, at magnitude 8.7 in **Pisces**; on the 19th – 23 13.32 -00 35.9, at magnitude 8.5 in **Pisces**; and on the 29th – 23 07.43 -02 14.4, at magnitude 8.2 in **Pisces**.

Asteroid **4 Vesta** – Vesta’s positions, according to the *RASC Observer’s Handbook, 2022 USA Edition*, are as follows: On August 9th – 22 31.25 -18 19.8, at magnitude 6.0 in **Aquarius**; on the 19th – 22 22.86 -19 44.1, at magnitude 5.8 in **Aquarius**; and on the 29th – 22 13.69 -20 58.5, at magnitude 5.9 in **Aquarius**. Vesta’s positions, *by my estimates*, are as follows: On August 2nd – about 10” northwest of the star **66 Aquarii**; on the 6th – about 10” west and a bit north of **66 Aquarii**; on the 10th – about 10.2 “ due south and a touch east of **Upsilon Aquarii**; on the 14th – about 8” due north and a bit west of **NGC 7293 (Helix Nebula)**; on the 18th – about 9.5” northwest of **NGC 7293**, or about 8” due north and a little east of the star **47 Aquarii**; on the 22nd – about 6’ due north and a touch west of **47 Aquarii**; on the 26th – about 3’ northeast of **41 Aquarii**; on the 30th – about 1.5’ due west of **41 Aquarii**; and on September 3rd – about 6’ west and a little south of **41 Aquarii**.

Asteroid **192 Nausikaa** – Nausikaa’s positions, according to the *RASC Observer’s Handbook, 2022 USA Edition*, are as follows: On August 9th – 19 55.41 -28 51.1, at magnitude 9.7 in **Sagittarius**; and on the 19th – 19 46.7 -28 19.7, at magnitude 9.9 in **Sagittarius**.

Asteroid **704 Interamnia** – Interamnia’s positions, *by my estimates*, are as follows: On August 1st – about 1° southwest of the star **7 Pegasi**; on the 5th – about 1.7° west and a little south of **7 Pegasi**; on the 10th – about 2.8° due west and a touch south of **7 Pegasi** or about 2.5° southeast of **Beta Equulei**; on the 15th – about 1.4° southeast of **Beta Equulei**; on the 20th – about 1.2° due south and a touch west of **Beta Equulei**; on the 25th – about 0.6° northeast of **Alpha Equulei**; and on the 30th – about 0.6° northeast of **Alpha Equulei**.

Comets – Comet **73P/Schwassmann-Wachmann** is an evening comet – **73P’s** positions, according to **ALPO**, are as follows: On August 10th – 12 44 54 -04 36 36, at magnitude 11.5 in **Virgo**; on the 20th – 13 19 18 -10 35 54, at magnitude 11.3 in **Virgo**; and on the 30th – 13 58 24 -16 53 54, at magnitude 11.3 in **Virgo**.

Comet **C/2017 K2 (PANSTAARS)** – **K2’s** positions, according to **ALPO**, are as follows: On August 10th – 16 15 12 -14 27 06, at magnitude 7.5 in **Scorpio**; on the 20th – 16 05 12 -18 22 48, at magnitude 7.5 in **Scorpio**; and on the 30th – 15 58 42 -22 04 24, at magnitude 7.5 in **Scorpio**. **K2’s** positions,

by my estimates, are as follows: On August 1st – about 1.2° northwest of **M107**; on the 5th – about 0.8° east-southeast of **Chi Scorpii**; on the 10th – about 1.3° due south of **Chi Scorpii**; on the 15th – about 1.7° due east and a touch north of **Theta Librae**; on the 20th – about 0.6° due north and a little west of **Beta Scorpii**; on the 25th – about 0.7° due west and a touch north of **Omega Scorpii** or about 0.8° due east and a touch south of **Lambda Librae**; and on the 30th – about 0.3° due west and a little north of **Delta Scorpii**.

Comet **C/2019 L3 (Atlas)** is an evening comet – **L3’s** positions, according to **ALPO**, are as follows: On August 10th – 08 45 12 -01 27 06, at magnitude 10.5 in **Hydra**; on the 20th – 08 55 06 -03 13 24, at magnitude 10.6 in **Hydra**; and on the 30th – 09 04 42 -05 04 12, at magnitude 10.7 in **Hydra**.

Comet **C/2020 V2 (ZTF)** is an evening comet – **V2’s** positions, according to **ALPO**, are as follows: On August 10th – 10 08 54 +52 54 30, at magnitude 12.1 in **Ursa Major**; on the 20th – 10 15 06 +52 40 12, at magnitude 12.0 in **Ursa Major**; and on the 30th – 10 21 54 +52 38 30, at magnitude 11.8

in **Ursa Major**.

Comet **C/2021 P4 (Atlas)** – **P4's** positions, according to **ALPO**, are as follows: On August 10th – 10 24 00 +05 41 06, at magnitude 9.7 in **Sextans**; on the 20th – 10 46 00 -02 18 00, at magnitude 9.9 in **Sextans**; and on the 30th – 11 07 48 -10 02 24, at magnitude 10,1 in **Crater**.

Comet **C/2022 E3 (ZTF)** – **E3's** positions, according to **ALPO**, are as follows: On August 10th – 17 11 00 +35 29 54, at magnitude 13.2 in **Hercules**; on the 20th – 16 48 06 +34 27 12, at magnitude 13.0 in **Hercules**; and on the 30th – 16 29 36 +32 00 00, at magnitude 12.8 in **Hercules**.

Meteor Showers – There are two **Major (Class I) Meteor Showers** active in August: The **Southern Delta Aquarids**, active from July 18th through August 21st, peaks on July 31 with a maximum zenith hourly rate (mzhr) of 20; and the **Perseids**, active from July 14th through September 1st, peaks on August 13th with a mzhr of 100.

There are four **Minor (Class II) Meteor Showers** active in August: The **July Pegasids**, active from July 4th through August 8th, peaked on July 11th; the **Alpha Capricornids**, active from July 7th through August 15, peaked on July 31st; the **Kappa Cygnids**, active from August 1st through August 27th, peaks on August 14 with a mzhr of 3; and the **Aurigids**, active from August 26th through September 4th, peaks on September 1st.

There is one **Variable (Class III) Meteor Shower** active in August – the **Beta Hydusids**, active from August 15th through August 19th, peaks on 17th.

There are eleven **Weak (Class IV) Meteor Showers** (mzhr of <2) active in August; the **July Gamma Draconids**, active from July 23rd through August 3rd, peaked on July 28th; the **Eta Eridanids**, active from July 10th through September 10th, peaks on August 6th; the **Piscis Austrinids**, active from August 1st through August 10th, peaks on August 7th; the **Northern Delta Aquariids**, active from August 2nd through August 17th, peaks on August 12th; the **August Xi Draconids**, active from August 4th through August 28th, peaks on August 15th; the **Beta Hydusids**, active from August 15th through August 19th, peaks on August 17th; the **August Beta Perseids**, active from August 17th through September 8th, peaks on August 21st; the **Zeta Draconids**, active from August 12th through September 5th, peaks on August 26th; the **August Gamma Cepheids**, active from August 17th through September 6th, peaks on August 29th; the **Nu Eridanids**, active from August 31st through September 21st; and the **September Lyncids**, active from August 30th through September 20th.

Mythology:

Lyra – The Lyre

Mythologically, Lyra was the lyre of the great musician Orpheus, whose venture into the Underworld is one of the most famous of Greek stories. It was the first lyre ever made, having been invented by Hermes, the son of Zeus and Maia (one of the Pleiades sisters). Hermes made the lyre from the shell of a tortoise that he found browsing outside his cave on Mount Cyllene in Arcadia. Hermes cleaned out the shell, pierced its rim and tied across it seven strings of cow gut, the same as the number of the Pleiades. He also invented the plectrum with which to play the instrument.

The lyre got Hermes out of trouble after a youthful exploit in which he stole some of Apollo's cattle. Apollo angrily came to demand their return, but when he heard the beautiful music of



A compact but prominent constellation, Lyra is marked by the fifth brightest star in the night sky, Vega.

the lyre, he let Hermes keep the cattle and took the lyre in exchange. Eratosthenes says that Apollo later gave the lyre to Orpheus to accompany his songs.

Orpheus was the greatest musician of his age, able to charm rocks and streams with the magic of his songs. He was even said to have attracted rows of oak trees down to the coast of Thrace with the music of his lyre. Orpheus joined the expedition of Jason and the Argonauts in search of the Golden Fleece. When the Argonauts heard the tempting song of the Sirens, sea nymphs who had lured generations of sailors to destruction, Orpheus sang a counter melody that drowned the Siren's voices.

Later, Orpheus married the nymph Eurydice. One day, Eurydice was spied by Aristaeus, son of Apollo, who attacked her in a fit of passion. Fleeing from him, she stepped on a snake and died from its poisonous bite. Orpheus was heartbroken; unable to live without his young wife, Orpheus descended into the Underworld to ask for her release. Such a request was unprecedented. But the sound of his music charmed even the heart of Hades, the god of the Underworld, who finally agreed to let Eurydice accompany Orpheus back to the land of the living on one solemn condition: Orpheus must not look behind him until the couple were safely back in daylight.

Orpheus readily accepted and led Eurydice through the dark passage that led to the upper world, strumming his lyre to guide her. It was an unnerving feeling to be followed by a ghost. He could never be quite sure that his beloved was following, but he dared not look back. Eventually, as they approached the surface, his nerve gave out. He turned around to confirm Eurydice was still there – and at that moment she slipped back into the depths of the Underworld, out of his grasp forever.

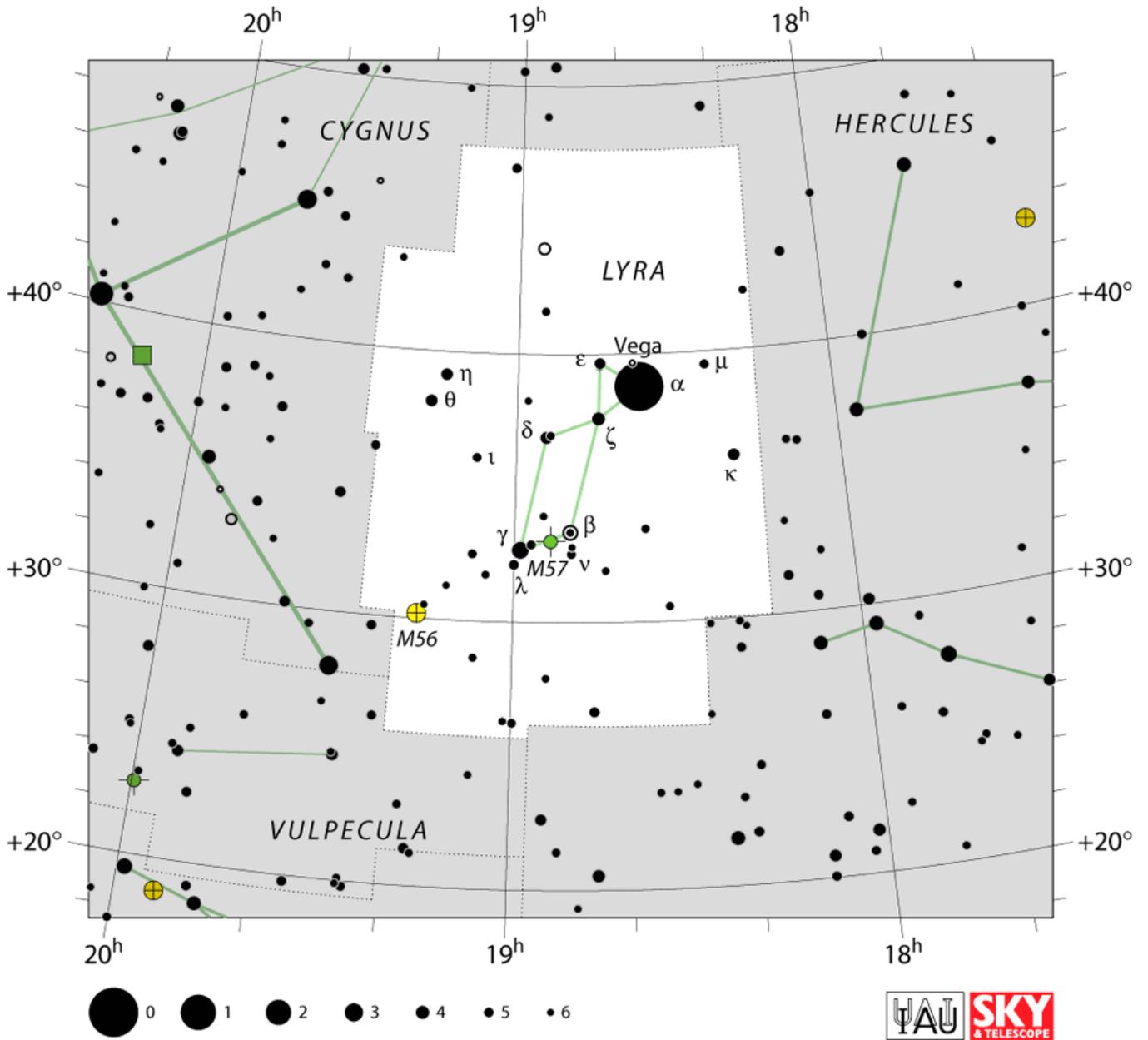
Orpheus was inconsolable. He wandered the countryside plaintively playing his lyre. Many women offered themselves to the great musician in marriage, but he preferred the company of young boys.

There are two accounts of the death of Orpheus. One version, told by Ovid in his *Metamorphoses*, says that the local women, offended by being rejected by Orpheus, ganged up on him as he sat singing one day. They began to throw rocks and spears at him. At first his music charmed the weapons so that they fell harmlessly at his feet, but the women raised such a din that they eventually drowned the magic music so that their missiles found their target.

Eratosthenes, on the other hand, says that Orpheus incurred the wrath of the god Dionysus by not making sacrifices to him. Orpheus regarded Apollo, the Sun god, as the supreme deity that would often sit on the summit of Mount Pangaeum, awaiting dawn, so that he could be the first to salute the Sun with his melodies. In retribution for this snub, Dionysus sent his manic followers to tear Orpheus limb from limb. Either way, Orpheus finally joined his beloved Eurydice in the Underworld, while the Muses put the lyre among the stars with the approval of Zeus, their father.

Ptolemy knew the constellation's brightest star simply as Lyra. The name we use for the star today, Vega, comes from the Arabic words *al-nasr al-waqi* that can mean either 'the swooping eagle' or 'vulture', for the Arabs saw an eagle or vulture here. The constellation was often depicted on star maps as a bird positioned behind a lyre. It seems that the Arabs visualized Vega and its two nearby stars Epsilon and Zeta Lyrae as an eagle with folded wings, swooping down on its prey, whereas in the constellation Aquila the star Altair and its two attendant stars gave the impression of a flying eagle with its wings outstretched.

Beta Lyrae is Sheliak, a name that comes from the Arabic for 'harp', in reference to the constellation as a whole. Gamma Lyrae is called Sulafat, from the Arabic meaning 'the tortoise', after the animal from whose shell Hermes made the lyre.



The End