



*Newsletter of the Baton Rouge Astronomical Society*

**Next Meeting: Monday, August 14<sup>th</sup> at 7PM at HRPO**  
(2<sup>nd</sup> Mondays, Highland Road Park Observatory)

**Presenters:** Chris Desselles, Merrill Hess, and Ben Toman  
will share tips, tricks and insights regarding the upcoming Solar Eclipse.

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**Like this newsletter? See past issues back to 2009 at  
<http://brastro.org/newsletters.html>**

## President's Message

August, 21, 2017. Total eclipse of the Sun. What more can I say. If you have not made plans for a road trip, you can help out at HRPO. All who are going on a road trip be prepared to share pictures and experiences at the September meeting.

BRAS has lost another member, Bart Bennett, who joined BRAS after Chris Desselles gave a talk on Astrophotography to the Cajun Clickers Computer Club (CCCC) in January of 2016, Bart became the President of CCCC at the same time I became president of BRAS. The Clickers are shocked at his sudden death via heart attack. Both organizations will miss Bart. His obituary is posted online here:

<http://www.rabenhorst.com/obituary/sidney-barton-bart-bennett/>

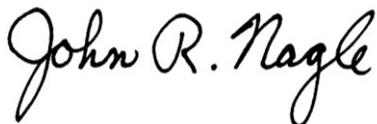
Last month's meeting, at LIGO, was a success, even though there was not much solar viewing for the public due to clouds and rain for most of the afternoon. BRAS had a table inside the museum building, where Ben and Craig used material from the Night Sky Network for the public outreach. BRAS gave away the ETX 90 telescope we have been selling tickets @ \$5 each. Over \$600 was raised and to my great surprise, I held the winning ticket! This will make a very nice gift for my grandkids this Christmas.

Sometime next year BRAS will raffle off another ETX 90, which belonged to Wally Pursell and was donated by his family.

The Bylaws of BRAS have been updated by Wally Pursell and I, and every member of BRAS will get a copy in the mail in October to review and suggest changes (if any) by November's meeting. BRAS will vote on adopting the changes at the December meeting.

Time to start thinking about officers for next year. The offices of President, Vice-president, and Secretary are up for elections due to term limits. The current officers can serve in another office; they cannot serve in the same office more than two years in a row.

Clear Skies,



John R. Nagle  
President of BRAS and Observing Chairperson

P.S. The PAS-sponsored **Star Gaze is October 17<sup>th</sup> (Tuesday) to October 22<sup>nd</sup>** (Sunday). You can access the "Deep South Star Gaze Registration and Liability Form by joining this Yahoo group:

<https://groups.yahoo.com/neo/groups/Deep-South-Star-Gaze/info>

If you are already signed up, the form is located here:

[https://groups.yahoo.com/neo/groups/Deep-South-Star-Gaze/files/2017%20DSSG%20Registration%20and%20Liability%20Release/DSSG\\_2017%20Fall%20Registration\\_and\\_Liability\\_Form.pdf](https://groups.yahoo.com/neo/groups/Deep-South-Star-Gaze/files/2017%20DSSG%20Registration%20and%20Liability%20Release/DSSG_2017%20Fall%20Registration_and_Liability_Form.pdf)



*ETX-90. The book was another raffle item.*



## Secretary's Summary of July LIGO event

No real meeting this month, but we had an excellent picnic out at LIGO on July 15th. The weather was beautiful for most of the event with just some clouds and light rain later in the day. Cooler temperatures than previous years and a nice breeze added to the enjoyment!

We had a lot of great food, as usual. While my attempt at making Wally's Boston Baked Bean recipe was marred by an alarmingly present taste of salt, I ended up taking home an empty dish. If anyone had a bout of high blood pressure after sampling the dish, we'll just blame Wally's recipe! (I'll make it better next time, I promise.)

As in Outreach Notes, we had some members set up solar scopes and an info table for inside. We were also treated to a recitation of the latest award winning essay by Ephrain Craddock. (Reading award winning essays at the LIGO picnic is getting to be a habit for that young man!)



*Ephrian reads us his new story.*

This year, we were even joined by several of our LIGO friends for the picnic and it was fun to catch up with them. Of course, after the food and socializing, we went inside and had fun in the Science Center and took part in the facility tours.

It was another great time out there and if you still haven't made the trek out, you have to do so in the near future. To have such an amazing haven of science right in our own back yard is a privilege that should not be overlooked.



*BRAS Table, Night Sky Network's display of relative sizes of planets –Craig and Ben.*

*Michele took a bunch of snapshots and her i-phone made this little movie of the event:*

<https://www.dropbox.com/s/02vv59js7dzjdfq/Ligo2017.mov?dl=0>



Since this was an informal meeting, there was no business discussed or conducted and no formal secretary notes. (That's why you're just getting this summary!) Of course, it will be business as usual for the next meeting and I hope to see you out there.

Clear Skies,

Ben Toman  
BRAS Secretary (For all the good I'm worth!)



**TOUR OF LIGO'S CONTROL ROOM**



## BRAS Outreach Report

Hi Everyone,

Summer has been slower, but not altogether dead. We had some members (Steve Richard, Chris Raby, Brad Schaefer, Scott Cadwallader...sorry if I'm missing anyone!) bring out scopes for solar observing at our picnic at LIGO on July 15th. Believe it or not, the clouds stayed away for a short time so we could see a nice sunspot group. Afterwards and concurrently, Craig Brenden set up a table inside the LIGO Science Center and showed off the scale model solar system and gave out information on the club and the HRPO to patrons. He was joined later by yours truly.

Of course, the upcoming event that all are talking about is the

### ***total solar eclipse on August 21st.***

There will be an event at the HRPO (please see the message from the HRPO for more info) and as will surely be mentioned, they could use a hand. If you are not one of the lucky ones heading up to the path of totality, please consider volunteering at the HRPO to assist with the public. There has been a lot of interest in this event and it will likely grow to a fever pitch the closer the date comes.

Finally, associated with the eclipse, BRAS will be giving a presentation at the Ascension Parish Library branch in Gonzalez on Tuesday, August 15th at 6:30pm. Chris Kersey will be the lead presenter. If you would like to assist (demos, possible solar observing) please let me know as soon as you can.

### **Tuesday, August 15th**

Eclipse Talk

Ascension Parish Library (Gonzalez)

6:30pm

Clear Skies,

Ben Toman  
Outreach Coordinator

### **2017 Officers:**

President: John Nagle  
Vice-President: Craig Brenden  
Secretary: Ben Toman  
Treasurer: Trey Anding

### **BRAS Liaison for BREC:**

Chris Kersey

### **BRAS Liaison for LSU:**

Greg Guzik

### **Committees/Coordinators:**

Outreach:

Ben Toman

Observing:

John Nagle

Light Pollution:

Thomas Halligan

Webmaster:

Frederick Barnett

Newsletter:

Michele Fry





## BRAS Light Pollution Committee Report

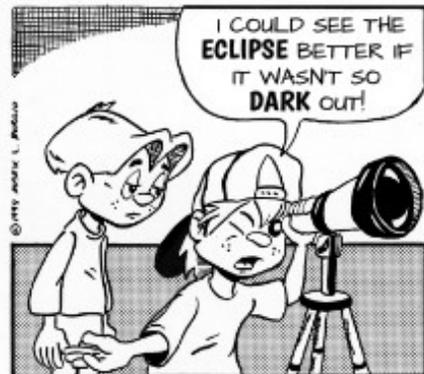
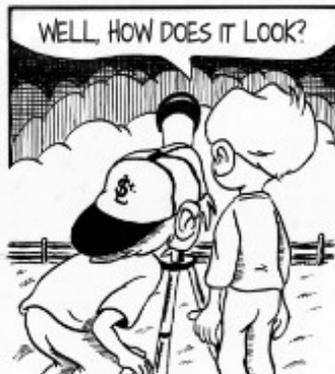
Meeting takes place at 6:45, 45 minutes before the regular monthly meeting.  
Everyone is welcome to join in.

Thomas Halligan  
Light Pollution Chairperson

*Space is right overhead—double stars, nebulae, the Milky Way Galaxy and other galaxies. We can see it if we let it through*

### Acorn Park (The Early Years)

by M. L. Burgio



© 2015 Acorn Park by M. L. Burgio



## Recent Entries in the BRAS Forum

*Below are selected additions to the BRAS Forum. There are also nine active polls. The Forum has reached 4600 posts.*

Happy Birthday, [U.S. of A. Langley Research Center](#) Turns 100  
BREC Asking for Input on [Possible Zoo Move](#)  
Moon Occulted [Porrima](#) on 30 June





## **20/20 Vision Campaign** **GLOBE at Night: 14 to 23 August [Hercules]**

### OBSERVATIONS NEEDED FOR SCHOOL PROJECT

BRAS is in the process of assisting yet another student at St. Joseph's Academy acquire raw data. This young lady (named Shreya) will need data concerning how light pollution effects the view of certain variable stars while they are at their minima.

Below is our suggested list of variable stars for Shreya. Dates are the times during which the star is at least thirty degrees above the horizon at 9pm Standard Time and 10pm Daylight Time. All periods (time from maximum to maximum) are fewer than ninety days. All chosen stars have a difference of at least 1.0 between maximum and minimum magnitude.

#### ***RX Leporis***

Magnitude Range: 5.4 to 7.4    Period: 75 days    Class: K  
Dates: 11 December to 9 March

#### ***T Monocerotis***

Magnitude Range: 5.6 to 6.6    Period: 27 days    Class: G  
Dates: 14 December to 12 April

#### ***S Leporis***

Magnitude Range: 6.0 to 7.6    Period: 89 days    Class: K  
Dates: 12 January to 4 March

#### ***ST Ursae Majoris***

Magnitude Range: 6.0 to 7.6    Period: 81 days    Class: M  
Dates: 12 February to 15 July

#### ***g Herculis***

Magnitude Range: 4.4 to 6.0    Period: 80 days    Class: M  
Dates: 29 April to 28 September

#### ***R Lyrae***

Magnitude Range: 3.9 to 5.0    Period: 46 days    Class: M  
Dates: 5 June to 6 November

#### ***Sheliak***

Magnitude Range: 3.3 to 4.4    Period: 12.9 days    Class: B  
Dates: 8 June to 31 October

#### ***X Cygni***

Magnitude Range: 5.9 to 6.9    Period: 16.4 days    Class: F  
Dates: 5 July to 29 November

#### ***Algol***

Magnitude Range: 2.1 to 3.4    Period: 2.87 days    Class: B  
Dates: 9 October to 9 March

**Observations should only be made when the Moon is below the horizon. Each observation should include the location's GLOBE at Night measurement or SQM measurement. Use all of these parameters to report your results to [observatory@brec.org](mailto:observatory@brec.org).**





# Messages from HRPO

Highland Road Park Observatory



## FRIDAY NIGHT LECTURE SERIES

all start at 7:30pm

**4 August: “Great Martian Opposition”** The countdown begins to 27 July 2018—when Mars becomes the biggest and brightest in Earth’s sky it has been in fifteen years! This presentation provides an overview of the year-long apparition of Mars which culminates in that glorious Friday night.

**18 August: “The Brushy Creek Crater”** Paul Heinrich of LSU will discuss the investigation leading him and his colleagues to discover an actual impact crater just northeast of Baton Rouge!

**25 August: “The Chinese Calendar”** Professor John Henderson returns for his informative presentation of a lunisolar calendar traditionally used by hundreds of millions of people for centuries.

### SCIENCE ACADEMY

Saturdays from 10am to 12pm

For ages eight to twelve. \$5/\$6 per child.

**5 August: “Solar Safety”**

**19 August: “Solar Eclipses”**

**26 August: “Mercury”**

### ONE-TIME CALLS FOR VOLUNTEERS

**\*Friday 11 August, 10pm to 2am.** *One or two volunteers.* **Perseid Meteor Shower.** Front desk duty, telescope operation, monitoring. Low difficulty.

**\*Monday 21 August, 11am to 3pm.** *Three or four volunteers.* **Partial Solar Eclipse.** Telescope viewing, front desk duty, eclipse explanations. Low to moderate difficulty.

**\*Saturday 26 August, 12pm to 2pm.** *One or two volunteers.* **Solar Viewing.** Telescope operation, physical science demonstrations, front desk duty. Low to moderate difficulty.

### ONGOING CALL FOR VOLUNTEERS

HRPO periodically needs BRAS volunteers for crafting (gluing, cutting, painting, etc.); training is offered for these easy to moderate tasks. We also have plenty of “grunt work”. We are asking any members with the time to do so to assist. Thank you.





**Perseid Meteor Shower**  
**Friday, 11 August from 10pm to 2am**  
**No admission fee. For all ages.**

ABOUT THE PERSEIDS: 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 10pm to 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...

POSITION OF THE MOON: The Moon, sadly, will interfere with viewing during the last half of this viewing program. The waning gibbous Moon will be in the constellation Cetus during this event and will rise at 10:30pm CDT.

OTHER OBJECTS FOR VIEWING

10pm to 11pm = [Saturn](#)

11:30pm to 12am = [Neptune](#)



**Partial Solar Eclipse**  
**Friday, 21 August from 11am to 3pm**  
**No admission fee. For all ages.**

Ten of millions of Americans will view live and in real time the stunning sight of the Moon passing in front of the Sun. For those fortunate souls within a narrow track, this eclipse will be total! The eclipse, sadly, will *not* be total in the Baton Rouge area. However, the phenomenon will still yield a wonderful partial eclipse of the Sun.

LIVE FEEDS FROM TOTALITY LOCATIONS: HRPO will provide live feeds from at least three different locations within the path of totality.

SOLAR VIEWERS: HRPO now has hundreds of solar viewers for sale to high schoolers and adults. They will be \$2.00 each (tax already included) and can be sold at a maximum of two per purchaser per day.





# Observing Notes:

by John Nagle

## Lyra – the Lyre

Position: RA 19, Dec. +40°

### *Named Stars:*

**Vega** (Alpha Lyr), “al-nasr al-waqi”, “the swooping eagle”, or “the swooping vulture”, mag. 0.03, 18 36 56.19 +38 46 58.8, is a white dwarf star, the second most bright star in the northern hemisphere, and the fifth brightest star in the night sky. **Vega** was the first star other than the **Sun** to be photographed, and the first one to have its spectrum recorded. **Vega** is believed to be 455 million years old, is a suspected variable star, and a rapid rotator with a projected rotational velocity of 274 km/sec at the equator. **Vega** was 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**. **Vega** forms one corner of the famous **Summer Triangle** asterism; along with **Altair** and **Deneb**. **Vega** also forms one vertex of a much smaller triangle with **Epsilon** and **Zeta Lyrae**.

**Sheliak** (Beta Lyr), “Al Shilyak”, “the Tortoise”, mag. 3.52, 18 50 04.79 +33 21 45.6, is a binary system. The components are so close together that they form a spectroscopic binary star, one that can’t be resolved into individual components with optical telescopes. The stars orbit each other with a period of 12.9414 days, and periodically eclipse each other. The primary, a bright blue giant star, has lost mass by transferal to the secondary star (the primary is out flowing its Roche lobe), and is surrounded by an accretion disk. **Beta Lyrae B**, mag. 7.20, 18 50 06.60 +33 21 05.0, a spectroscopic binary; **Beta Lyrae C**, mag. 13.40, 18 50 01.20 +33 21 26.0, are visual companions of **Beta Lyrae A**, with **Beta B** having a period of 4.348 days and a separation of about 12,000 AU.

**Sulafat** (Gamma Lyr), “al-sulhafät”, “the turtle”, mag. 3.25, 18 58 56.6 +32 41 22.4, is a blue-white giant star in a multiple star system. The companion stars are optical only; a 10<sup>th</sup> magnitude star with a separation of 177”; and a 12<sup>th</sup> magnitude star. The **Ring Nebula (M57)** lies between **Gamma Lyrae** and **Beta Lyrae**, but somewhat closer to **Beta Lyrae**.

**Aladfar** (Eta Lyr), “talons”, mag. 4.43, 19 13 45.49 +39 08 45.4, is a blue sub-giant variable star.

**Alathfar** (Mu Lyr), “al-‘uzfar”, “the talons”, mag. 5.11, 18 24 13.80 +39 30 26.1, is a white sub-giant star.

### *Deep Sky:*

**M56 (NGC 6679)**, mag. 8.2, 19 16.6 +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 2½° south and 4½° east of **M57**, or, from **Albireo (Beta Cygni)** move 2° north and 3° west. **M56** lies 20’ southeast from a 5.5 magnitude star.

**M57 (NGC 6720)**, “Ring Nebula”, “Smoke Ring Nebula”, “Donut Nebula”, PK63+13.1, mag. 8.8, 18 53.6 +33 02, 80’x60’ in size, is a planetary nebula; pretty large; irregular ring structure; a very impressive and stunning object; photo mag. 9.7. A 4-inch telescope brings out the annular shape. The very blue central star, mag. 15.2, is difficult to see. Located almost half-way between **Beta** and **Gamma Lyrae**.

**Steph 1**, “Delta Lyrae Cluster”, mag. 3.8, 18 54.2 +36 55, 19’ 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; mag. ranges from 11 to 12.

**NGC 6791**, mag. 9.5, 19 21 32 +37 48 21, 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.

**GRB 050525A**, this gamma-ray burst flared in 2005, and its afterglow re-brightened at 33 minutes after the original burst – this is only the 3<sup>rd</sup> 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.

### *Other Stars:*

**Delta Lyrae**, is an optical double star, with the two stars simply lying along the same line-of-sight. The brighter of the two, **Delta<sup>2</sup> Lyrae** (believed to be 75 million years old), mag. 4.22, 18 54 30.29 +36 53 55.0, is a red, bright giant star; the fainter star, **Delta<sup>1</sup> Lyrae**, mag. 5.58, 18 53 43.56 +36 58 18.2, is a spectroscopic binary star (a blue-white dwarf star), with a period of 88 days, and the secondary star is an orange giant star at mag. 9.8.

**Epsilon Lyrae, the “Double-Double Star”**, is a wide binary system with both components being themselves close binary stars, with a faint star orbiting component C, for a total of 5 stars in the system. **Epsilon<sup>1</sup> Lyrae A**, mag. 4.67, 18 44 20.34 +39 40 11.9; **Epsilon<sup>2</sup> Lyrae A**, mag. 4.60, 18 44 22.78 +39 36 45.3; **Epsilon<sup>1</sup> Lyrae B**, mag. 6.02, 18 44 20.30 +39 40 16.0; **Epsilon<sup>2</sup> Lyrae B**, mag. 5.37, 18 44 27.09 +39 36 46.0. **Epsilon<sup>1</sup> Lyrae A and B** is separated by 2.35 arc seconds with an orbital period of 1200 years. **Epsilon<sup>2</sup> Lyrae A and B** is separated by 2.3 arc seconds with an orbital period of about 600 years.

**HD 176051**, mag. 5.20, 18 57 01.47 +32 54 05.8, is a low mass binary star with a high mass planet.

**HD 173416**, mag. 6.06, 18 43 36.11 +36 33 23.8, is a yellow giant star with one planet in orbit.

**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.

**HD 180314**, mag. 6.61, 19 14 50.21 +31 51 37.3, has an unconfirmed planet in orbit.

**HD 178911**, mag. 6.74, 19 09 09.38 +34 36 01.6, is a triple star system consisting of a close binary, and a visually separable sun-like star with a planet in orbit. This is the second planet found in a triple star system.

**HD 181068**, mag. 7.09, 19 17 08.98 +41 15 53.3, is a triple eclipsing binary system.

**RR Lyrae**, mag. 7.13, 19 25 27.91 +42 47 03.7, is the proto-type of a variable star class. These periodical variable stars are usually found in globular clusters, and frequently used to measure galactic distances, as the relationship between their pulsation period and absolute magnitude makes them excellent standard candles. **RR Lyrae** stars are pulsating, horizontal branch stars that are old, metal poor stars. **RR Lyrae** has evolved from the main sequence, passed through the red giant stage, and is now in the horizontal branch stage of stellar evolution, powered by helium fusion in its core and hydrogen fusion in the shell surrounding the core.

**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.

**HD 175370**, mag. 7.19, 18 53 00.0 +43 42 49, has one planet in orbit.

**Kepler 444**, mag. 9.0, 19 19 01 +41 38 05, has 5 transiting planets.

**Kepler 37**, mag. 9.77, 18 58 23.1 +44 31 05, has 3 planets in orbit, and at the time of the discovery of the first planet in February of 2013, it was the smallest known exo-planet.

**HR Lyrae**, 18 53 25.05 +29 13 37.7, is a nova star.

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

**MV Lyrae**, 19 07 16.29 +44 01 07.8, is a nova star.



**WISE 18 28+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.

## ***Sky Happenings: August, 2017***

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

- Aug 2<sup>nd</sup>** - The **Moon** is at apogee (251,671 miles from **Earth**) at 12:55 PM CDT.
- Aug. 3<sup>rd</sup>** - The **Moon** passes 3° north of **Saturn** at 2 AM CDT,  
**Uranus** is stationary at 5 AM CDT.
- Aug. 7<sup>th</sup>** - **Full Moon** occurs at 1:11 PM CDT,  
Observers across most of **Europe, Africa, Asia, and Australia** will witness a partial lunar eclipse.
- Aug. 9<sup>th</sup>** - The **Moon** passes 0.9° south of **Neptune** at 6 PM CDT.
- Aug. 12<sup>th</sup>** - **Mercury** is stationary at 1 AM CDT,  
**Perseid** meteor shower peaks.
- Aug. 13<sup>th</sup>** - The **Moon** passes 4° south of **Uranus** at 12:00 AM CDT.
- Aug. 14<sup>th</sup>** - **Last Quarter Moon** occurs at 8:15 PM CDT.
- Aug. 16<sup>th</sup>** - The **Moon** passes 0.4° north of **Aldebaran** at 2 AM CDT.
- Aug. 18<sup>th</sup>** - The **Moon** is at perigee (227,497 miles from **Earth**) at 8:18 AM CDT.
- Aug. 19<sup>th</sup>** - The **Moon** passes 2° south of **Venus** at 12:00 AM CDT.
- Aug. 21<sup>st</sup>** - **New Moon** occurs at 1:30 PM CDT,  
**Total Solar Eclipse** ,  
**Venus** passes 7° south of **Pollux** at 2 PM CDT.
- Aug. 25<sup>th</sup>** - The **Moon** passes 3° north of **Jupiter** at 8 AM CDT,  
**Saturn** is stationary at 10 AM CDT.
- Aug. 26<sup>th</sup>** - **Asteroid Juno** is stationary at 5 AM CDT,  
**Mercury** is in inferior conjunction at 4 PM CDT.
- Aug. 29<sup>th</sup>** - **First Quarter Moon** occurs at 3:13 AM CDT.
- Aug. 30<sup>th</sup>** - The **Moon** is at apogee (251,226 miles from **Earth**) at 6:25 AM CDT,  
The **Moon** passes 4° north of **Saturn** at 9 AM CDT.

## ***Planets:***

**Mercury** – On August 1<sup>st</sup>, **Mercury** shines at magnitude 0.4 and stands 6° high a half-hour after sundown. You should be able to spot it with your naked eye. By August 8<sup>th</sup>, it glows at magnitude 0.9 and appears 3° high 30 minutes after sunset. On August 1<sup>st</sup>, **Mercury**'s disk will appear 8.1" across and 42% lit. By the 8<sup>th</sup>, the disk spans 9.2" and illuminated 30%. On August 26<sup>th</sup>, **Mercury** will be in inferior conjunction.

**Venus** – The brilliant "morning star" rises in darkness more than 2½ hours before the **Sun** and climbs some 20° above the eastern horizon an hour before sunup all month. Shining at magnitude -4.0, it is impossible to miss on any clear morning. **Venus** begins August in western **Gemini** and moves quickly eastward. On August 19<sup>th</sup>, a waning crescent **Moon** will be 2° below **Venus**. On the 21<sup>st</sup>, the planet will pass 7° south of magnitude 1.2 **Pollux**. **Venus** will cross into **Cancer** on August 25<sup>th</sup>, and will end the month barely 1° from the **Beehive Cluster (M44)**. Through a telescope, It shows a relatively small gibbous disk. On August 1<sup>st</sup>, it appears 15" across and 74% illuminated. By The 31<sup>st</sup>, its apparent diameter has shrunk to 12" while its phase has waxed to 83% lit.

**Mars** – **Mars** was in conjunction with the Sun in late July, and it will remain lost in the glare of the Sun throughout August.

**Jupiter** – **Jupiter** will shine at magnitude -1.9 in early August, standing out in the deepening twilight and doesn't set until 11PM local daylight time. **Jupiter** resides in **Virgo**, some 8° northwest of 1<sup>st</sup> magnitude **Spica**. On August 1<sup>st</sup>, **Jupiter** sits in front of the 11<sup>th</sup> magnitude spiral galaxy **NGC 4941**. The planet's light will drown out the galaxy for visual observers, although astro-imagers might be able to capture both, using

multiple exposures. On July 31<sup>st</sup>, **Jupiter** will lie 9' west of **NGC 4941**, when you can practice your technique. **Jupiter**'s eastward motion continues all month, and by the 31<sup>st</sup>, it has pulled within 4° of **Spica**, although the pair lies lower to the horizon and sets around the time twilight ends. On August 1<sup>st</sup>, The planet spans 34", and stands high enough after sunset to enable sharp views of cloud features. But Jupiter's low altitude late in the month means more of **Earth**'s atmosphere to look through, making fine detail hard to see.

**Saturn** – **Saturn** stands about 30° above the southern horizon as twilight ends. The 0.3 magnitude planet is in **Ophiuchus**, and the closest competitor (in magnitude) is 1<sup>st</sup> magnitude **Antares** in **Scorpius**, which lies 13° to the west-southwest. Third magnitude **Theta Ophiuchi** resides 3° due south of **Saturn**. The planet remains virtually stationary relative to these background stars all month. Best views of **Saturn** will come when it lies high in the south as darkness falls. On August 15<sup>th</sup>, the planet spans 17.4" across the equator and 16.1" through the poles. The ring system appears 40" in diameter and tips 27° to our line of sight at mid month. The brightest of **Saturn**'s moons, 8<sup>th</sup> magnitude **Titan**, will show up through any instrument. It will be north of the planet on August 10<sup>th</sup> and 26<sup>th</sup>, and south of the planet on August 2<sup>nd</sup> and 18<sup>th</sup>. In closer orbits lies a trio of 10<sup>th</sup> magnitude satellites – **Tethys**, **Dione**, and **Rhea** – all visible through a 4-inch telescope. **Mimas** and **Enceladus** glow more faintly and seem to hug the outer edge of the rings. When their orbits carry them farthest from the planet, you will need an 8-inch instrument to see them. The best opportunity this month comes on the night of August 13/14, when **Enceladus** reaches greatest eastern elongation less than two hours after **Mimas** reaches greatest western elongation. On the same night, look for **Iapetus** 2' north of **Saturn**, when it will glow at 11<sup>th</sup> magnitude.

**Uranus** – **Uranus** will rise in the late evening along with the stars of **Pisces the Fish**. **Uranus**, at magnitude 5.8, will show up easily through binoculars. The best time to look for the planet is an hour or two before morning twilight begins, when it lies more than half-way to the zenith in the southeastern sky. **Uranus** remains 1° north of 4<sup>th</sup> magnitude **Omicron Piscium** all month. A telescope can confirm a sighting by showing **Uranus**' distinct blue-green color on a disk that spans 3.6".

**Neptune** – Distant **Neptune** will reach opposition and peak visibility in early September, but the view in August is nearly as good. The planet rises in mid-evening and climbs some 30° high in the southeast by midnight. You can find the magnitude 7.8 object through binoculars or a telescope against the backdrop of **Aquarius**. On August 1<sup>st</sup>, it lies 2° east of 4<sup>th</sup> magnitude **Lambda Aquarii** and in a direct line with the 6<sup>th</sup> magnitude stars **81** and **82 Aquarii**. **Neptune** moves slowly westward during August and ends the month 1.3° east of **Lambda Aquarii**. At a magnification of 60x or more under good viewing conditions, **Neptune** shows a 2.4"-diameter disk with an obvious blue-grey color.

**Pluto** – On August 15<sup>th</sup>, **Pluto** will be at RA 19 13.6 Dec.-21 39, at 14.2 magnitude and having an angular size of 0.1" at 100% illumination. **Pluto** spends all of August in **Sagittarius**, west of the "**Teaspoon Asterism**". At the end of the month, the planet will be just south of the star **HD 179201**.

**Asteroids** – **Asteroid 89 Julia** will reach magnitude 9.0 in late August. The signpost for this asteroid is a squashed box of four 5<sup>th</sup> magnitude stars: **55**, **57**, **58**, and **59 Pegasi**. The box lies 6° south of magnitude 2.5 **Markab (Alpha Pegasi)**, the star at the southwestern corner of the **Great Square**. On August 11<sup>th</sup>, **Julia** will be not quite 1° south of **57 Pegasi**, on the 16<sup>th</sup> it will be about 1° south of **55 Pegasi**, and on the 26<sup>th</sup> it will be just over 1° north of **Rho Pegasi**.

**Comets** – Astronomers expect **Comet PANSTARSS (C/2015 ER61)** to glow at an unimpressive 9<sup>th</sup> magnitude in August, it should be fairly easy to find. This deep-space visitor remains within a few degrees of the **Seven Sisters** – the **Pleiades** star cluster (**M45**) – all month. The comet passes less than 1° south of the cluster from August 14<sup>th</sup> to 21<sup>st</sup>. For the best views, hunt for the comet in August's first few nights or after the midmonth, when the **Moon** is out of the predawn sky.

Two other comets are not as well placed. **Comet Johnson (C/2015 V2)** should glow at 8<sup>th</sup> magnitude as it heads south from **Centaurus** into **Lepus**. It won't be worth the effort to see unless you can see the bottom of **Scorpius**. **Comet 71P/Clark** glows at 10<sup>th</sup> magnitude as it travels southern **Scorpius**, passing less than 1° from magnitude 1.6 **Shaula** and 7<sup>th</sup> magnitude globular cluster **NGC 6441** in the final two weeks of



August.

**Meteor Showers** –The **Perseid** meteor shower is considered to be the finest of the year by almost everyone. It consistently delivers a high rate, and it also occurs during the warm summer nights. Unfortunately, a bright waning gibbous **Moon** interferes with the peak on August 12<sup>th</sup> of this year. Typically, the **Perseid** meteor shower produces up to 150 meteors/hour under a dark sky, but the **Moon** will wipe out the fainter ones, reducing the overall rate by 80 to 90 percent. But still, 15 to 30 meteors/hour is nothing to sneeze at, so watch the **Perseids** radiating from **Perseus** before dawn on the 12<sup>th</sup>.

There are three meteor showers associated with Lyra, namely the Alpha Lyrids, the June Lyrids, and the Lyrids. The Lyrids shower runs from April 16<sup>th</sup> to April 26<sup>th</sup>, with a peak on April 21<sup>st</sup>/22<sup>nd</sup>, with a rate of about 10 meteors/hour. The June Lyrids shower runs from June 10<sup>th</sup> to June 21<sup>st</sup>, with a peak rate of about 8 or so blue and white meteors/hour. The upside is that more than 30% of the meteors leave fire and smoke trails. The Alpha Lyrids shower runs from July 9<sup>th</sup> to July 20<sup>th</sup>, but is not a naked eye shower. Binoculars can reveal as many as 18-33 meteors/hour at the peak on July 14<sup>th</sup>.

**When to View the Planets:**

Evening Sky

- Mercury (west)
- Jupiter (west)
- Saturn (south)
- Neptune (east)

Midnight

- Saturn (southwest)
- Uranus (east)
- Neptune (southeast)

Morning Sky

- Venus (east)
- Uranus (south)
- Neptune (southwest)



**DARK SKY VIEWING - PRIMARY ON AUGUST 19TH, SECONDARY ON AUGUST 26TH**



# Mythology!

## Lyra – the Lyre

A compact but prominent constellation marked by the fifth brightest star in the sky, Vega. 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). 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 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 Sirens' voices.

Later, Orpheus married the nymph Eurydice. One day, Eurydice was spied by Aristaeus, a 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, 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 that 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 at 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.

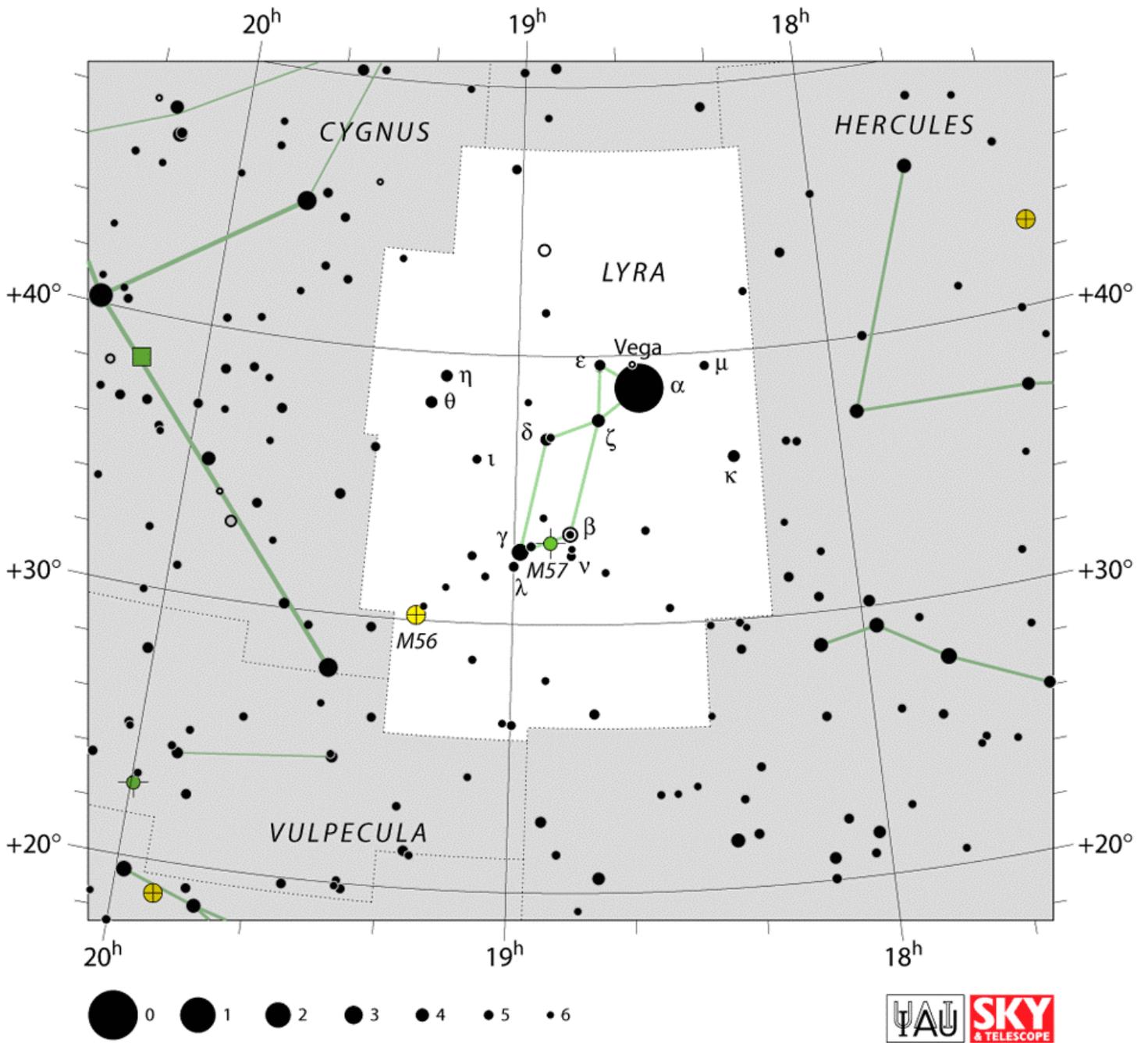
Eratosthenes, on the other hand, says that Orpheus incurred the wrath of the god Dionysus by not making sacrifices to him. Orpheus regarded Apollo, the Sun god, as the supreme deity and would often sit on the summit of Mount Pangaeum, awaiting dawn, so that he could be the first to salute the Sun with 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

