



**Next Meeting: Monday, March 13<sup>th</sup> at 7PM at HRPO**  
(2<sup>nd</sup> Mondays, Highland Road Park Observatory)

PRESENTERS: Ben Toman Outreach - "Making the Sky Fun";  
Don Weinell, "Hodges Garden Stargaze Party"; John Nagle, "Spring Deep Sky Challenge"

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## President's Message

Here we are, in March, with spring just three weeks away. Daylight Savings Time will start on Sunday, March 12<sup>th</sup>, at 2:00 AM CDT. Don't forget to "spring forward", i.e., set your clocks an hour ahead.

BRAS's second Sidewalk Astronomy, held at Perkins Rowe on the backup date (due to weather) on February 9<sup>th</sup>, was a success with an estimate of over 150 viewers. Thanks to all the BRAS members who brought their own telescopes, and those BRAS members that also showed up to help out and answer questions.

We have two outreaches this month, and our own Star Party at Hodges Gardens. We start the month off with the Rockin' at the Swamp on March 11<sup>th</sup>, we had a lot of fun last year, and can always use volunteers – see Ben Toman. The second event in March is our (BRAS) very own star party at Hodges Gardens – we all need to support this event, so come to the party, which will be on March 22<sup>nd</sup> through March 26<sup>th</sup>. The last outreach will be for those who do not go to Hodges Gardens, because it happens on the last day of the star party – March 25<sup>th</sup>, the 100<sup>th</sup> Anniversary of the Boy Scouts, being held at the State Fair Grounds on Airline Highway. Volunteers needed for solar viewing and to answer questions. See Ben Toman to volunteer.

The memorial service for Wally Pursell will be held on April 1<sup>st</sup> (Wally would appreciate the April Fool's date) at the Rabenhorst East Funeral Home at 11000 Florida Blvd. Visitation will start at 11 AM, a service at noon, and a reception to follow it. Come say goodbye to our dear friend and one of the original Founders of BRAS.

In April, the IAD (International Astronomy Day) will be happening – the Observatory had a record crowd last year – and volunteers are badly needed to help out for both HRPO and BRAS. See Chris Kersey for HRPO volunteering, and Ben Toman for BRAS volunteering.

Thanks to Krista Dison for volunteering to be Secretary of the Light Pollution Committee.

Scheduled, but not yet confirmed (as of this writing) for the April BRAS meeting will be, as our Guest Speaker, LSU Professor Dr. Tabby Boyajian, of "Tabby's Star". BRAS will hold a small reception after the meeting.

Clear Skies,

*John R. Nagle*

John R. Nagle  
President of BRAS and Observing Chairperson

**Riddle:**  
**How many ears does Captain Kirk have?**

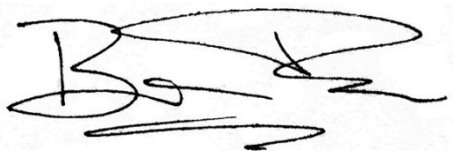
P.S. On this page our Editor has placed a riddle. The first 3 members to find and email me the exact answer hidden somewhere in this newsletter, will receive one FREE raffle ticket to spend at the next meeting. (Must attend meeting to qualify.) I'm at [jonagle@cox.net](mailto:jonagle@cox.net)



## Secretary's Summary of January Meeting

- ✚ -Meeting opened. President John Nagle presiding with 22 people in attendance
- ✚ -Call for nominations for Astronomical League Youth Award was made
- ✚ -John announced that Wally's legacy page online has been made permanent
- ✚ -It was announced that BRAS purchased a copy of the Great Course by Brad Schaefer
- ✚ -Astro news items from around the world were mentioned
- ✚ -Don Weinell talked about our upcoming Star Party at Hodges Gardens
- ✚ -Craig Brenden mentioned concerns about possible harmful effects of iPad/iPhone light to people's vision
- ✚ -Thomas Halligan updated the club on the Light Pollution Committee
- ✚ -Ben Toman talked about past and upcoming outreach events and mentioned Wally's memorial service will be April 1st at 12pm at Rabenhorst East
- ✚ -Craig Brenden talked about upcoming meeting programs
- ✚ -King cake and coffee were made available
- ✚ -Merrill Hess gave a talk on the Great American Eclipse in August 2017
- ✚ -Meeting ended

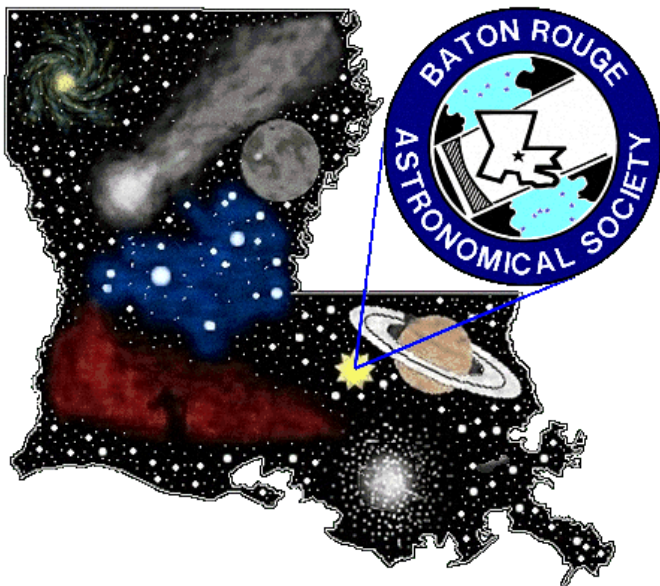
Clear Skies,



Ben Toman  
Secretary

### Milestones:

Our website, [www.braastro.org](http://www.braastro.org) has just hit 80,000 views! We congratulate our webmaster, Fred Barnett, on this accomplishment.



### 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 Editor:

Michele Fry





## BRAS Outreach Report

Hi Everyone,

I hope you had a good Mardi Gras! Now it's time to get back to astronomy outreach.

We had another great Sidewalk Astronomy event at Perkins Rowe. We had to use the secondary date because we were clouded out for the primary, but it was great all the same. There were almost as many people out this time as we had at our first outing. (Around 175+) The folks at Perkins Rowe used all of their media outlets to get the word out and it brought out a lot more people than we were expecting for a Thursday night in February. We're planning on heading back again soon (see below.)

We're starting to get the annual "STEM/STEAM night" requests, so we'll have some events at schools that could use your help. Along with a couple upcoming BREC events and the Boy Scout 100th Anniversary, we'll be pretty busy this March and April.

### \*\*\*NEW\*\*\*

#### **Tuesday, March 7th**

Sidewalk Astronomy Perkins Rowe

6:30pm-8:30pm

Telescope observing and info

#### **Thursday, March 9th**

Sidewalk Astronomy Perkins Rowe (Secondary date in case of poor weather)

Same as above

#### **Saturday, March 11th**

Rockin' at the Swamp

Bluebonnet Swamp and Nature Center

9am-4pm

Solar observing, demos and info

6-8 people needed

### \*\*\*NEW\*\*\*

#### **Saturday, March 16th**

Math and Science Literacy Night

Woodlawn Middle School

5:30pm-7pm

Demos, info, telescope(?)

2-4 people needed





**\*\*\*NEW\*\*\***

**Thursday, March 23rd**

STEAM Night

Oak Grove Primary in Prairieville (Old Jefferson Hwy)

6pm-8pm

Demos, info

2-3 people needed

(This is their first STEAM night. I know it's during Hodges Gardens, but if some of you are staying in town, you may be able to help out.)

**Saturday, March 25th**

100th Anniversary of the Boy Scouts

State Fairgrounds at Airline Hwy

All day, essentially

Solar observing, info

4-6 people needed (They expect 4000-5000 scouts!!!!) Again, during Hodges, but if you are sticking in town, please consider helping out with this one.

There are so many for March, I'm not going to list requests for April and May at this time. Let's focus on the most pressing.

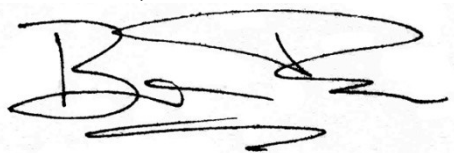
I'd also like to bring your attention to the Night Sky Network. We joined this a little more than a year ago and we're finally starting to utilize the site. Doing so will help make us eligible for more FREE outreach materials like the scale model Solar System we received. Based on our past events and upcoming events logged, we were given some neat lapel pins that we will be giving to club members that do some volunteering with us.

You can check out the website at [www.nightsky.jpl.nasa.gov](http://www.nightsky.jpl.nasa.gov). As a BRAS member, you are eligible to get some log in credentials where you can create your own profile. One of our coordinators just needs to add you to the list on the site. For lack of a better way of doing it, and perhaps to see just who actually READS the newsletter, if you would like to receive log in credentials, just send me an email (or reply to the email I send out containing the newsletter) and let me know. I'll add your name and you will receive an email from the NSN with a temporary password and login.

I'm trying to keep our calendar current on the site. There are also cool webinars almost weekly that you can watch from home while logged in so it really is something in which you'd be interested.

Please take a look at the upcoming outreach requests and let me know ASAP when and where you can help out. No experience necessary. If you've never done one before, don't worry, we won't send you out there alone. These things are a great way to learn a little bit about our Universe and pass it along to others in the community. The more you do them, the more you learn, too!

Clear Skies,



Ben Toman  
Outreach Coordinator



## **Sidewalk Astronomy at Perkins Rowe – Thursday, February 9, 2017**

6:30-9 p.m., about 170 people lined up to see the moon, Venus and Mars

*photo by Ben Toman (lots more pics on his Facebook page)*



The participants at this event were, from left to right: Scott Cadwallader, John Nagle, Ben Toman, Craig Brenden, Steve Richard, Scott Louque and Trey Anding. That is Trey's 8" Orion Skyquest dobsonian scope in the foreground.





## **BRAS Light Pollution Committee Report**

**2<sup>nd</sup> Mondays, from 6:15 pm to 7:00pm, before the BRAS public meeting.**

One does not need to be a BRAS member to attend.

Krista Dison has volunteered to be Secretary of this committee!

This meeting will...

- introduce the general public to the LPC
- explain the LPC's benefit to amateur astronomers, nature lovers, homeowners and taxpayers
- summarize the accomplishments of BRAS in this endeavor

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.***







## Recent Entries in the BRAS Forum

***Below are selected additions to the BRAS Forum. There are also nine active polls. The Forum has reached 4300 posts.***

[Michoud Assembly Facility](#) Struck by Tornado

[Rodney Bell](#) Due Back Next Month

[Uranus](#) Distances Itself from Zeta Piscium

[Jupiter](#) Enters Evening Sky

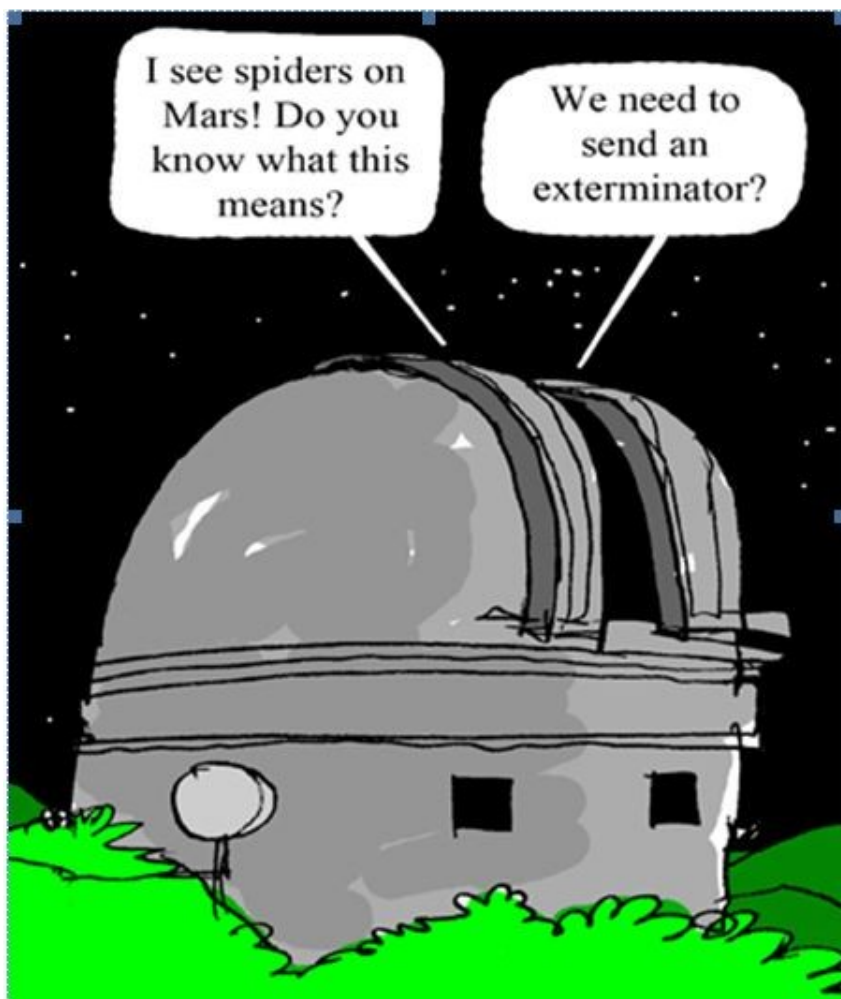
[Penumbral Lunar Eclipse](#) Views Hindered by Clouds

Attendance for HRPO [Solar Viewing](#) Doubles in 2017

[Geomagnetic Storm Activity](#) Predicted for Early March

30<sup>th</sup> Anniversary of [Supernova 1987A](#) Discovery

[TRAPPIST-1](#) has Multiple Planets Orbiting







## BRAS's 20/20 Vision Campaign

**GLOBE at Night: 20 to 29 March**

### 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

The Highland Road Park Observatory will be closed the 22<sup>nd</sup> thru 24<sup>th</sup> of March .



## FRIDAY NIGHT LECTURE SERIES

*all start at 7:30pm*

**3 March: “Stellar Evolution”** A [star’s life](#) is very dependent on its initial mass. The unaided-eye stars that we see nightly are at different stages in their development. Some are young and blue, some middle-aged and yellow, some elderly and red. LSU physics professor Juhan Frank will condense the lives of stars to one hour!

**17 March: “Mercury and Venus”** One [zips around the Sun](#) in eighty-eight Earth days and one has a [hellish atmosphere](#) of temperature and pressure. From our vantage point, each can go through phases! Why are Mercury and Venus so different? Can we view these planets from our homes?

**31 March: “NASA Spinoff Technology”** HRPO Center Supervisor Tom Northrop gives the audience an overview of the [fascinating objects and technology](#) that developed as a direct result of the American Space Program. Many of these devices and materials may be at the doctor's office, the mall—some might even be in your home!

## SCIENCE ACADEMY

*Saturdays from 10am to 12pm*

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

**4 February:** “The [Space Shuttle](#)”

**11 February:** “[Expedition 3](#)”

**18 February:** “[Layers of the Earth](#)”

## ONE-TIME CALLS FOR VOLUNTEERS

**\*Friday 10 March, 5:30pm to 7:30pm.** *Two or three volunteers.* [Edge of Night.](#)

Helping explain to patrons altitude and azimuth, where Venus and Sirius are. Low difficulty.

**\*Saturday 11 March, 7pm to 10pm.** *Two or three volunteers.* [Evening Sky Viewing Plus.](#) Telescope operation, physical science demonstrations, front desk duty. Low to moderate difficulty.

**\*Saturday 25 March, 2pm to 6pm.** *Two or three volunteers.* [NanoDays.](#) Telescope operation, 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”. Also, we would more than welcome any who can help for at least one or two hours anytime during Winter Rocket Camp. We are asking any BRAS volunteers with time to assist. Thank you.





## **INTERNATIONAL ASTRONOMY DAY**

**Saturday, 29 April from 3pm to 11pm**

**Eleventh Consecutive Year!**

***Volunteers needed! HRPO will be calling!***

RAFFLE TICKETS, \$5 EACH

### SOME RETURNING EXHIBITORS...

American Institute of Aeronautics and Astronautics

Baton Rouge Amateur Radio Club

Baton Rouge Metropolitan Airport

Baton Rouge Mosquito Abatement

Baton Rouge Zoo

Bluebonnet Swamp Nature Center

Civil Air Patrol

LIGO

MARS Van

Saint Joseph's Academy

### RIDES...

18" Dry Slide

Spacewalk

Obstacle Course

Hamster Ball

### OTHER...

Adventure Quest

Face Painting

Homemade Comet

Scope-on-a-Rope

**Early volunteer sign-up is needed. It is extremely difficult to schedule a volunteer if that person reveals his availability with only two or three days to go. Sign-up now, please!**

**Riddle Answer:  
A left ear, and right ear, and a final frontier!**







# Observing Notes:

by John Nagle

## Cancer – The Crab

**Position: RA 07 55 to 09 22, Dec. +33° to 06.4°**

### *Named Stars:*

**Acubens (Alpha Cnc)**, “**Al Zubanah (claws)**”, “**Sertan (the crab)**”, mag. 4.26, 08 58 29.20 +11 51 28.0, is a multiple star system. The primary is a close binary, both stars being white main sequence dwarf stars, the primary at mag. 4.25, with a separation of 5.3 au and a period of 6 years. The secondary is also a binary of two small main sequence stars, most likely red dwarf stars that are 600 au from the primary pair and have a period of 6300 years.

**Al Tarf (Beta Cnc)**, “**The Eye**”, mag. 3.53, 08 16 30.95 +09 11 08.4, is a binary star with the main component being an orange giant star, having two 14<sup>th</sup> magnitude companion stars, one being a red dwarf star at a separation of 29 arc seconds and a period of 76,000 years, and the second has a separation of 70 arc seconds from the primary.

**Asellus Borealis (Gamma Cnc)**, “**northern donkey**”, mag. 4.66, 08 43 17.21 +21 28 06.9, is a white-hued sub-giant star.

**Asellus Australis (Delta Cnc)**, “**southern donkey**”, mag. 3.94, 08 44 41.11 +18 09 17.5, is an orange-hued giant star. This star holds the record for the longest name, *Arkushanangarushashutu*, from the Babylonian, meaning “the southeast star in the crab”.

**Tegmine (Zeta Cnc)**, “**the shell of the crab**”, mag. 4.67, 08 12 12.71 +17 38 53.3, is a multiple star system with at least 4 stars. **Zeta Cancrī** is composed of two binary stars, **Zeta-1 Cancrī** and **Zeta-2 Cancrī**, separated by 5.06 arc seconds. **Zeta Cancrī A** (mag. 5.6) and **Zeta Cancrī B** (mag. 6.0), are both yellow-white main sequence dwarf stars separated by 0.6 to 1.2 arc seconds with an orbital period of 1100 years. The second pair, **Zeta Cancrī C** and **Zeta Cancrī D**, are a yellow star and a 10<sup>th</sup> magnitude red dwarf star separated by only 0.3 arc seconds, and have an orbital period of 17 years and orbit **Zeta Cancrī A** and **B** with a separation of 6.3 arc seconds and a period in excess of 1000 years. A fifth star, **Zeta Cancrī E**, is suspected to exist with a separation of 0.064 arc seconds from **Zeta Cancrī C**.

### *Deep Sky:*

**M 44 (NGC 2632)**, “**The Beehive Cluster**”, “**Praesepe**”, “**Manger**”, **Cr 189**, mag. 3.1, 08 40.1 +19 59, 1.7° in size, is an open cluster; detached, weak concentration of stars; moderate range in brightness; mag. of brightest star is 6.3; very large, very bright. **Praesepe** contains at least a thousand stars with more than half of them (63%) being red dwarf stars, and about a third (30%) are Sun like. Epsilon Cancrī is the brightest star in the cluster at mag. 6.3.

**M 67 (NGC 2682)**, mag. 6.9, 08 51.4 +11 49, 30' in size, is an open cluster of over 1,000 stars; detached, weak concentration of stars; moderate range in brightness; very bright, very large; mag. of brightest star is 9.7. **M 67** is believed to be one of the oldest of all galactic clusters, with most estimates being between 4 and 5 billion years of age. **M 67** is located 1.8° west of **Alpha Cancrī** and about 9° south of **Praesepe (M 44)**.

**Beyond magnitude 10 there are 12 NGC, 1 UGC, and 1 Pk object.**

## Other Stars:

**55 Cnc (Rho<sup>1</sup> Cnc)**, mag. 5.96, 08 52 36.13 +28 19 53.0, is a double star that consists of a yellow main sequence dwarf star and a 13<sup>th</sup> magnitude red dwarf star, with a separation of 85 arc seconds, that can only be seen through a telescope. **55 Cancr**i is notable because 5 extra-solar planets have been confirmed orbiting the primary star. The planet nearest the star is believed to be a terrestrial planet with a mass similar to **Neptune**, with the other 4 planets being gas giants. The secondary red dwarf star is also suspected to be a binary star. **55 Cancr**i is located 1.2° east-southeast of **Iota Cnc**.

**RS Cnc**, mag. 6.04, 09 10 38.8 +30 57 47.6, is a Technetium star. (43<sup>rd</sup> element)

**HD 73710**, mag. 6.42, 08 40 22.11 +19 40 11.9, is a multiple star system in the **Beehive Cluster (M44)**. Component **A**, mag. 6.4; component **B<sup>1</sup>**, mag. 10.3, separation of 20.5" from **A**; component **B<sup>2</sup>**, mag. 15.1, separation of 1.8" from **B<sup>1</sup>**; component **C**, mag. 7.6, separation of 63.4" from **A**; component **D**, mag. 9.2, separation of 82.7" from **A**; component **E**, mag. 12.5, separation of 16.2" from **A**.

**HD 79498**, mag. 8.03, 09 15 09 +23 22 32, has one planet in orbit with a separation of 3.13 au, and a period of 1,966 days.

**HD 73534**, mag. 8.24, 08 39 15.80 +12 57 37.3, has one planet in orbit with a separation of 3.15 au, and a period of 1800 days.

**HD 74721**, mag. 8.72, 08 45 59.2 +13 15 48.6, is a horizontal branch star.

**G9-38**, 08 58 15.19 +19 45 47.1, is a flare star.

**PSR B0823+26**, 08 26 51.44 +26 37 22.8, is a pulsar star.

## Sky Happenings: March, 2017

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



- March 1<sup>st</sup>** - The **Moon** passes 4° south of **Uranus** at 10 AM CST,  
The **Moon** passes 4° south of **Mars** at 1 PM CST,  
Evening – as twilight deepens, **Mars** will appear 5° to the right of the **Moon**, and **Venus** will be 15° to the lower right of the pair. **Uranus**, at 6<sup>th</sup> magnitude, is 2.1° below **Mars**,  
**Neptune** is in conjunction with the **Sun** at 9 PM CST.
- March 2<sup>nd</sup>** - **Venus** is stationary at 8 AM CST,  
The **Moon** passes 0.8° south of the dwarf planet **Ceres** at 3 PM CST.
- March 3<sup>rd</sup>** - The **Moon** is at perigee (229,325 miles from **Earth**) at 1:33 AM CST,  
Asteroid **Amphitrite** is at opposition at 6 AM CST.
- March 4<sup>th</sup>** - The almost **First Quarter Moon** will occult **Aldebaran** at 9 PM CST for most of the contiguous **United States, Mexico, and Central America (Chicago time- 9:57 PM to 10:33 PM CST)**
- March 5<sup>th</sup>** - **First Quarter Moon** occurs at 5:32 AM CST.
- March 6<sup>th</sup>** - **Mercury** is in superior conjunction at 6 PM CST,  
Asteroid **Vesta** is stationary at 9 PM CST.
- March 8<sup>th</sup>** - Asteroid **Daphne** is at opposition at 1 AM CST.
- March 10<sup>th</sup>** - The **Moon** passes 0.8° south of **Regulus** at 5 PM CST,  
Night – the waxing gibbous **Moon** hangs 2° to 4° below or lower left of **Regulus**.
- March 12<sup>th</sup>** - **Daylight Savings Time** starts at 2 AM CST/CDT,  
**Full Moon** occurs at 9:54 AM **CDT**.
- March 14<sup>th</sup>** - The **Moon** passes 2° north of Jupiter at 3 PM CDT,  
Night – **Jupiter, Spica**, and the waning gibbous **Moon** form a triangle after rising in the east around 8 or 9 PM CDT,  
Asteroid **Pallas** is in conjunction with the **Sun** at 10 PM CDT.
- March 18<sup>th</sup>** - The **Moon** is at apogee (251,438 miles from **Earth**) at 12:25 PM CDT.  
The **Moon** passes 3° north of **Saturn** at 5 AM CDT,
- March 20<sup>th</sup>** - **Vernal Equinox** occurs at 5:29 AM CDT – **Spring** begins in the **Northern Hemisphere**,

**Last Quarter Moon** occurs at 10:58 AM CDT.

**March 25<sup>th</sup>** **Venus** is in inferior conjunction at 5 AM CDT.

**March 26<sup>th</sup>** The **Moon** passes 0.005° south of **Neptune** at 3 AM CDT.

**March 27<sup>th</sup>** **New Moon** occurs at 9:57 PM CDT.

**March 29<sup>th</sup>** The **Moon** passes 7° south of **Mercury** at 2 AM CDT.

**March 30<sup>th</sup>** The **Moon** is at perigee (226,088 miles from **Earth**) at 7:32 AM CDT,  
The **Moon** passes 5° south of **Mars** at 8 AM CDT.

## ***Planets:***

**Mercury** – **Mercury** passes through superior conjunction on March 6/7. **Mercury** will climb into view, at mag. -1.4, around March 15<sup>th</sup>, just above the western horizon in the bright twilight. You can start looking for it around March 20<sup>th</sup>, when it lies 6° above the western horizon a half-hour after sunset. A telescope will reveal the planet's 5.7" diameter disk, which appears nearly 85% lit. On March 25<sup>th</sup>, **Mercury** stands 10° high at the same post-sunset time, but will glow at mag. -0.9, with a telescope showing a disk 6.4" across and 43% lit. On March 30<sup>th</sup>, **Mercury** stands 12° above the horizon a half-hour after sunset, and is still 7° high 30 minutes later. **Mercury**, at mag. -0.2, will appear 7.5" across, and 43% lit when viewed through a telescope. **Mercury** will reach the peak of this apparition, its best of 2017, on April 1<sup>st</sup>.

**Venus** – On March 1<sup>st</sup>, **Venus** is in the west-northwest in the bright twilight, still very high (20°), but already a striking crescent in a telescope; 48" wide and 16% lit, and at mag. -4.8. On March 11<sup>th</sup>, **Venus** enlarges and thins to 55" wide and 7% lit, on March 19<sup>th</sup>, 59" wide and 2% lit, and finally, on March 24<sup>th</sup>, 59" wide and 1% lit, less than 12 hours before inferior conjunction. **Venus** is far enough north of the **Sun** to start rising before sunup on March 15<sup>th</sup> – 10 days before inferior conjunction. On March 22<sup>nd</sup>, **Venus** sets 30 minutes after the **Sun**, but the following morning rises 33 minutes before the **Sun**. Can you see **Venus** with the naked eye on both ends of a single night? Or as the "**Morning Star**" before sunrise and the "**Evening Star**" after sunset – on the same day? Can you spot **Venus** after it rises about 40 minutes before sunrise on March 25<sup>th</sup>? From eastern **North America** you will be seeing it almost at the hour of inferior conjunction: 10 UT (5 AM CDT). **Venus** will be 8°18' north of the **Sun** at the time. On the final day of March, **Venus** rises about 1 hour before the **Sun**, and is still almost 59" wide and only 2% lit.

**Mars** – **Mars** remains in view in the west during twilight and into the evening, setting about 3 hours after the **Sun**. On March 1<sup>st</sup>, **Mars** is 2° northeast of **Uranus** and the crescent **Moon** stands 4° southeast of **Mars**. **Uranus** glows at mag. 5.9 and should show up easily – all three are visible in the same field of view through 7x50 or 10x50 binoculars. **Mars** crosses from **Pisces** to **Aries** on March 8<sup>th</sup>, and travels more than half-way across **Aries** by month's end.

**Jupiter** – **Jupiter** is on its way to an April 7<sup>th</sup> opposition. It rises in **Virgo** well after dark (around 9 PM local time) in early March, then in twilight after the turn of **Spring**. **Jupiter** brightens from mag. -2.3 to -2.5, and in telescopes its globe grows from 42" to 44" wide. **Jupiter** is highest after midnight all month.

**Jupiter** appears against the backdrop of **Virgo**, about 5° from 1<sup>st</sup> magnitude **Spica**. **Io** orbits **Jupiter** the fastest of the inner moons, and has shadow transits on the mornings of March 2, 9, 16, and 25<sup>th</sup>. **Europa** gives a similar show on the nights of March 15/16 and 22/23, and again in the morning of March 30<sup>th</sup>.

**Ganymede**'s event occurs on the nights of March 9/10 and 16/17. During the 16/17 transit, the shadow touches **Jupiter**'s cloud tops at 1:36 AM CDT, with the moon itself starting to transit at 3:53 AM CDT, just 12 minutes before the shadow lifts back into space. **Callisto** currently will not pass in front of or behind **Jupiter**. The morning of March 13<sup>th</sup> provides a rare opportunity to see the moon due south of **Jupiter**.

**Saturn** – **Saturn** is in western **Sagittarius** and rises around 2:30 AM local time on March 1<sup>st</sup>. All month, early risers will be greeted to spectacular binocular views of **Saturn** with the **Lagoon** and **Trifid Nebulas** (**M 8** and **M 20** respectively), and open star cluster **M 23** less than 5° away. **Saturn** stands among them shining at mag. 0.5. At mid-month, the rings of **Saturn** span 38" and tilt 26° to our line of sight.

**Uranus** – **Uranus**, at mag. +5.9, is 2.2° to the left of **Mercury** on March 25<sup>th</sup>. **Uranus** dips into the twilight glow after mid-month and will not return to view until mornings in the late **Spring**.

**Neptune** – **Neptune** is in conjunction with the **Sun** on March 2<sup>nd</sup>, so it is not visible this month.

**Sun** – The **Sun** arrives at the March **Equinox** at 5:29 AM CDT on March 20<sup>th</sup>, starting **Spring** in the





northern hemisphere and **Autumn** in the southern hemisphere.

**Moon** – The crescent **Moon** slices the western twilight about  $5^\circ$  to the left of **Mars** on March 1<sup>st</sup>. The dark limb of the first quarter **Moon** occults **Aldebaran** on the evening of March 4<sup>th</sup>, a naked eye event. The **Moon** is a couple of degrees below **Regulus** at nightfall on March 10<sup>th</sup>. The waning gibbous **Moon**, **Jupiter**, and **Spica** form a triangle the evening of March 14<sup>th</sup>. The last quarter **Moon** is  $3^\circ$  above **Saturn** in the early morning hours of March 20<sup>th</sup>. At dusk on March 29<sup>th</sup>, the waxing lunar crescent stands well below **Mars** and to the upper left of **Mercury**. On March 30<sup>th</sup>, the **Moon** shines to the left or upper left of **Mars**. On March 31<sup>st</sup>, the **Moon** hangs below the **Hyades** and **Aldebaran**. Favorable librations of the **Moon**: **Mare Humboldtianum** on March 6<sup>th</sup>; crater **Gauss** on March 9<sup>th</sup>; crater **Lyot** on March 13<sup>th</sup>; and **Monte's Cordillera** on March 24<sup>th</sup>. The greatest north declination is on March 7<sup>th</sup> ( $+18.9^\circ$ ); greatest south declination is on March 21<sup>st</sup> ( $-18.9^\circ$ ). Libration in longitude: east limb most exposed on March 11<sup>th</sup> ( $+4.7^\circ$ ); west limb most exposed on March 25<sup>th</sup> ( $-6.4^\circ$ ). Libration in latitude: north limb most exposed on March 5<sup>th</sup> ( $+6.8^\circ$ ); south limb most exposed on March 18<sup>th</sup> ( $-6.8^\circ$ ).

**Asteroids** – **Asteroid 4 Vesta** can be located quite easily - find 1<sup>st</sup> magnitude **Pollux** in **Gemini** with binoculars. Slide half a field of view to the southwest (lower right), and the second brightest dot near the field's center will be **4 Vesta**. The 325 mile wide asteroid's magnitude fades from 7.1 to 7.6 during March. **Asteroid 1343 Nicole** (16 miles in diameter) will occult a 6.3 magnitude star in **Leo's** snout, just in front of the **Sickle of Leo**, on March 10/11<sup>th</sup>. The occultation will be seen for up to 3 seconds in a narrow band running from **Georgia's** coast to just north of **San Francisco**.

**Comets** – Comet **PANSTARRS (C/2015 ER61)** – on March 1<sup>st</sup>, the 7<sup>th</sup> magnitude object sits between the **Lagoon** and **Triffid Nebulae** in **Sagittarius**. On March 8<sup>th</sup>, it passes  $1^\circ$  north of the bright globular cluster **M 22**. By the end of March, comet **41P/Tuttle-Giacobini-Kresak** should be a decent sight through binoculars and might even grow bright enough to see with the naked eye. The comet swings within 13 million miles of **Earth** in late March, its closest approach yet. The comet treks through **Ursa Major**, so it rides high in the sky for most of the night. Best views will be late in the month when the **Moon** is out of the sky. The comet will then lie near the bowl of the **Big Dipper**, passing within  $1^\circ$  of **Dubhe (Alpha Ursa Majoris)**, mag. 1.8, on the evening of March 27<sup>th</sup>.

**Meteor Showers** – There are two minor meteor showers in March. The **Zeta Boötids** peak on March 10<sup>th</sup>, with the radiant at RA 14 32 Dec. 12, and is composed of fast meteors leaving persistent trails. The **Sigma Leonids** peak on March 21<sup>st</sup>, and is composed of meteors of average speed.

## *When to View the Planets:*

### Evening Sky

Mercury (west)

Venus (west)

Mars (west)

Uranus (west)

### Midnight

Jupiter (southeast)

### Morning Sky

Venus (east)

Jupiter (southwest)

Saturn (south)

**DARK SKY VIEWING - PRIMARY ON MARCH 4TH, SECONDARY ON MARCH 25TH**



# Mythology:



## Cancer – The Crab

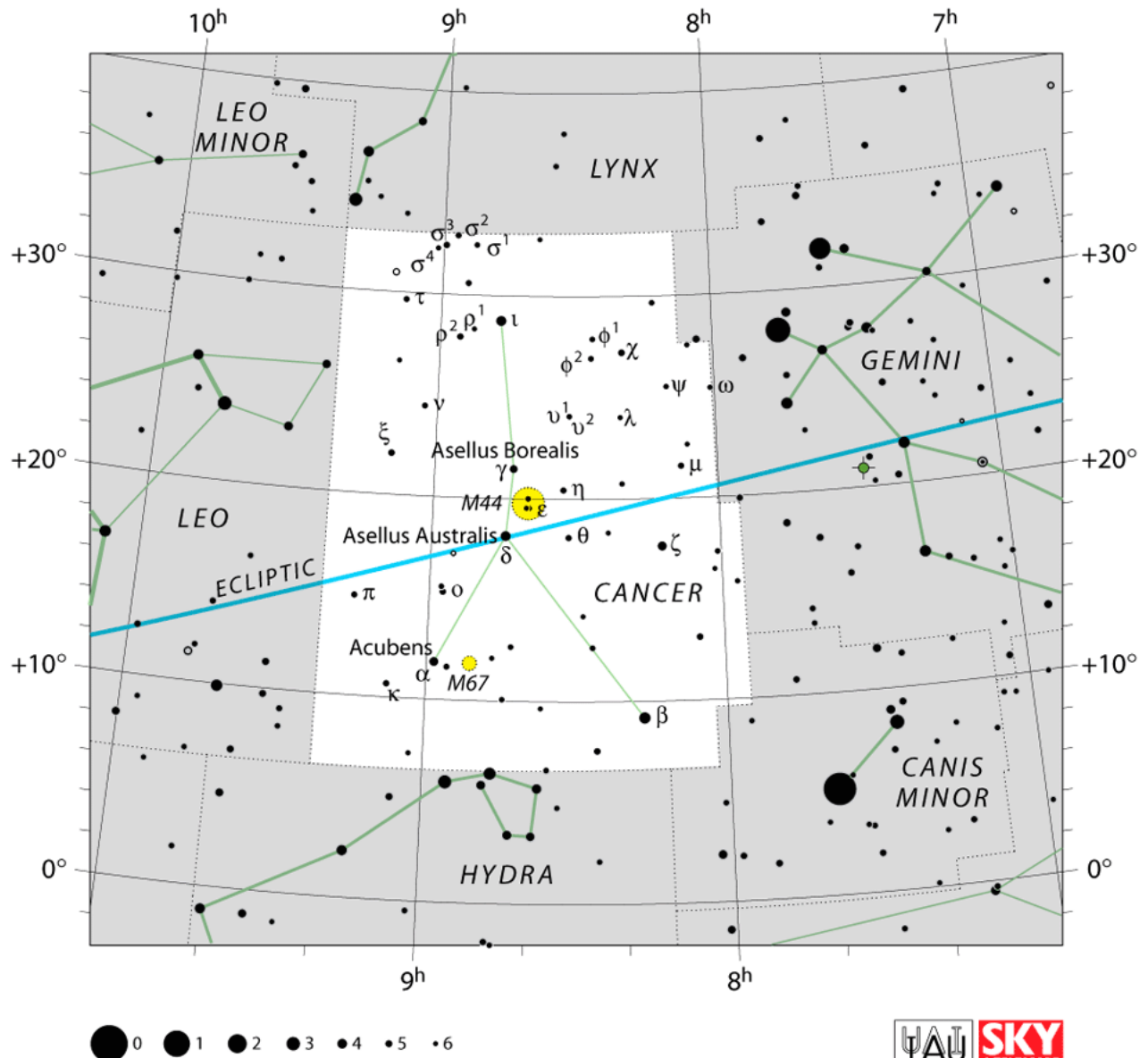
The crab is a minor character in one of the **Labors of Heracles**. While Heracles was fighting the multi-headed monster called the **Hydra** in the swamp near **Lerno**, the crab emerged from the swamp and added its own attack by biting Heracles on the foot. Heracles angrily stomped on the crab, crushing it. For this modest contribution to history, we are told the goddess Hera, the enemy of Heracles, put the crab among the stars of the zodiac. Fittingly enough for such a small character, it is the faintest of the zodiacal constellations, with no star brighter than 4<sup>th</sup> magnitude. The star **Alpha Cancri** is named **Acubens**, from the Arabic meaning ‘*claw*’.

Two stars in the constellation are named **Asellus Borealis** and **Asellus Australis**, **Latin** names meaning the ‘*northern ass*’ and the ‘*southern ass*’, and they have their own legend. According to Eratosthenes, during the battle between the gods and the giants that followed the overthrow of the **Titans**, the gods Dionysus, Hephaestus, and some companions came riding on donkeys to join in the fray. The giants had never heard the braying of donkeys before, and they took flight at the noise, thinking that some dreadful monster was about to be unleashed upon them. Dionysus put the asses in the sky, on the either side of a cluster of stars which the **Greeks** called **Phatne**, the *manger*, from which the asses seem to be feeding. Ptolemy described **Phatne** as “*the nebulous mass in the chest*”. Astronomers now know this star cluster by the **Latin** name **Praesepe**, but is popularly termed the **Beehive** (**Praesepe** can mean both manger and hive).

The **Tropic of Cancer** is the latitude on **Earth** at which the **Sun** appears overhead at noon on the summer solstice, June 21<sup>st</sup>. In the time of the ancient **Greeks**, the **Sun** lay among the stars of **Cancer** on this date, but the wobble of **Earth** on its axis, called precession, has moved the summer solstice to a point on the borders of **Gemini** and **Taurus**.

*See the crab now?*





The End

