

# Night Visions

September 2016 Issue

Newsletter of the Baton Rouge Astronomical Society

**Next Meeting: Monday, Sept. 12<sup>th</sup> at 7PM at HRPO**  
(2<sup>nd</sup> Mondays, Highland Road Park Observatory)

## What's In This Issue?

*Due to the 1000 Year Flood in Louisiana beginning August 14, some of our club's activities were curtailed, thus our newsletter is shorter than usual.*

[President's Message](#)

[Secretary's Summary for August \(no meeting\)](#)

[Light Pollution Committee Report](#)

[Outreach Report](#)  
Photo Gallery

[20/20 Vision Campaign](#)

[Messages from the HRPO](#)  
Triple Conjunction with Moon

[Observing Notes: Capricornus – The Sea Goat, by John Nagle & Mythology](#)



## BRAS President's Message

This has been a month of many changes for all of us. Some have lost almost everything in the flood, Some have lost a little, and some have lost nothing... Our hearts go out to all who have lost, and thanks to all who have reached out to help others.

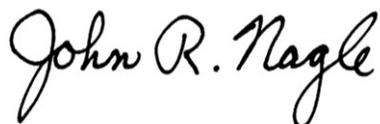
Due to the flooding, last month's meeting, at LIGO, was cancelled. The September meeting will be on the 12<sup>th</sup> at the Observatory, which did not receive any water during the flood, thus BRAS suffered no loss of property.

**As part of our Outreach effort.** If anyone you know has any telescope and/or equipment that was in water during the flood, let us know and we will try to help clean, adjust, etc. the equipment.

On September 2<sup>nd</sup> (I am a little late with this message), Dr. Alan Stern, the New Horizons Primary Investigator, gave two talks at LSU. The morning talk was for Astronomy graduate students, and was a little technical. I attended and enjoyed it very much. The afternoon talk was geared more for the public, and was well attended (about 40). I attended this talk also, sitting with Dr. Landolt. After the talk, Ben Toman and Scott Louque, who had sat further back from me, came up and we "did the nines" with Dr. Stern (see photo). As Dr. Stern explained, Planetary Scientists still and have always considered Pluto a "planet", not a "dwarf" or "minor" planet. Hence, "doing the nines".

We have some outreach events this month, and still need some volunteers for them. Look over the Outreach section in this newsletter, and volunteer if you are able.

Clear Skies,



John R. Nagle  
President of BRAS  
Observing Chairperson



L to R: Scott Louque, John Nagle, Dr. Stern, Ben Toman  
"Doing The Nines"



## BRAS Secretary's Summary for August

Hi Everyone,

Obviously, since our meeting at LIGO was cancelled for August, there are no Secretary notes or minutes to report.

*But . . . .*

I am happy to report that the LIGO facility did not take on water although many of its surrounding neighbors did. It would have been a horrible blow if the facility had flooded so soon after its recent upgrades and discoveries. As far as we know, they are still on track for beginning another data run this fall.

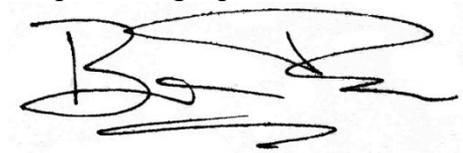
Our guest speaker for the September meeting will be **Dr. Ed Shihadeh of LSU**. We're lucky enough to host Dr. Shihadeh every several years or so and he gives an amazing presentation on large scale model rocketry including information on where you can go in Louisiana to see launches in person. Some of these rockets are several feet tall and travel miles up into the sky. Be sure to come check it out as it's always a fun one.

### **BRAS helps with cleaning and recovery of observing equipment.**

Finally, if you or anyone you know had observing equipment caught up in the flood waters, don't hesitate to contact BRAS for yourself or on a friend's behalf. We'll do our best to aid in the cleaning and recovery of the equipment. We've already had a couple members helping out by cleaning eyepieces, filters, OTAs and mirrors for other unfortunate members.

Hope to see you all at the meeting in September and continued best of luck with the ongoing recovery process. This time, instead of signing off with the common "Clear Skies" mantra of amateur astronomers, I think it's fitting to sign off with Jack Horkheimer's,

Keep Looking Up!



Ben Toman  
BRAS Secretary  
Outreach Chairperson





## BRAS Outreach Report

Hi Everyone,

The recent flooding had put thoughts of outreach and stargazing out of mind for a time, but it's time to get back in the saddle! First off, **Friday, September 2nd**, some of us headed over to the **Hill Memorial Library on LSU campus at 2pm** to hear a **FREE** lecture from **Dr. Alan Stern**, the New Horizons Primary Investigator. Later in the evening, some could stop by the **Burbank Soccer Complex** to view the triple conjunction of **Venus, Mercury and Jupiter** with a young Moon thrown in to boot! That started at **5:45pm**.

As far as outreach, we have two events coming up in the next couple of weeks followed by two more in early October. They are as follows:

**Thursday, September 8<sup>th</sup>, 7:15pm-9:15pm**

Stargazing at the Luther Library (1879 West Main St)  
Telescope observing  
2-3 volunteers needed

**Thursday, September 15<sup>th</sup>, 7pm-9pm**

LSU Art Museum (Shaw Center Downtown)  
Cocktails in Color: Sake tasting and Stargazing  
Telescope observing  
3-5 volunteers needed

**Saturday, October 8<sup>th</sup>, 10am-4pm**

Baton Rouge Mini Maker Faire  
Main Library  
Demo table and Solar observing  
6-8 volunteers needed

**Tuesday, October 11<sup>th</sup>, 6:30pm-8:30pm**

Stargazing at the Vacherie Library (2593 Highway 20)  
Telescope observing  
2-3 volunteers needed

Each of these events should be a lot of fun. I'm especially keen on the Sake tasting, but not too much. Someone's gotta drive the scopes! Please let me know **ASAP** if you are able and willing to help out with any of these events. I know some of our regular volunteers are still dealing with flood aftermath, so now is the time to step up if this would be your first time. We need you!

Clear Skies,

A handwritten signature in black ink, appearing to read 'Ben Toman'. The signature is stylized and somewhat cursive.

Ben Toman  
Outreach Chairperson





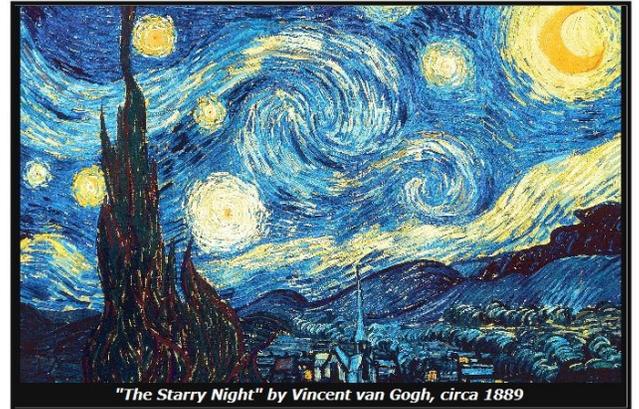
# BRAS Light Pollution Committee Report

**Monday, 12 September from 7pm to 8:30pm**

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

There was no meeting in August due to the flood.

Thomas Halligan  
Light Pollution Chairperson



"The Starry Night" by Vincent van Gogh, circa 1889

## No BRAS Event Summaries for August, BUT.....

Your BRAS event photos can go here. So  
**snan. snan. snan.**



Got one or more  
BRAS event photos?  
Send them to [newsletter@brastro.org](mailto:newsletter@brastro.org),  
att'n Michele,  
with a caption,  
preferably by the 26<sup>th</sup> of the month for  
inclusion, (space permitting), in this  
newsletter.  
Cite photographer' credits too.



## **BRAS's 20/20 Vision Campaign**

**GLOBE at Night: until 2 Sep, then 22 Sep to 1 Oct**  
**2016 GOAL: 200 Measurements.    CURRENT: 45**

### OBSERVATIONS NEEDED FOR SCHOOL PROJECT

BRAS is in the process of assisting a student at St. Joseph's Academy acquire raw data. She needs descriptions of views of five Messier objects—Pleiades, Orion Nebula, Andromeda Galaxy, Beehive Cluster, Whirlpool Galaxy—together with date and time, and the observing location's GaN measurement and quality of view. Parameters have been set defining whether each observation yields a poor, good or excellent view. An alert will also be sent out describing this exercise. The student needs very much this information with at least three sky views (different limiting magnitudes). The observation parameters for this project are as follows...

**M45 [Pleiades]** Aperture: binocular. Magnification: 10x – 25x.

Poor View: fifteen stars or fewer seen.

Good View: sixteen to twenty-nine stars seen.

Excellent View: thirty or more stars seen.

**M44 [Beehive Cluster]** Aperture: 50mm – 70mm. Magnification: 10x – 25x.

Poor View: indistinct blob seen.

Good View: at least ten distinct stars seen.

Excellent View: eleven or more distinct stars seen.

**M31 [Andromeda Galaxy]** Aperture: at least 80mm. Magnification: 20x – 40x.

Poor View: only core of the galaxy seen.

Good View: arms of the galaxy seen.

Excellent View: galaxy's companion (M32) seen.

**M51 [Whirlpool Galaxy]** Aperture: at least 8". Magnification: 25x – 50x.

Poor View: indistinct blob seen.

Good View: arms of the galaxy seen.

Excellent View: galaxy's companion (NGC 5195) seen.

**M42 [Orion Nebula]** Aperture: at least 80mm. Magnification 60x – 100x.

Poor View: only Trapezium (the four brightest stars) seen.

Good View: fifth star seen.

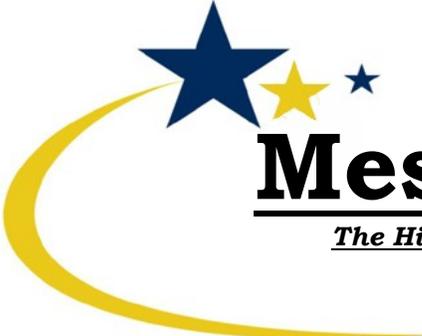
Excellent View: sixth star seen.

**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).**

**NOTE: Ms. Angelle needs these measurements to compliment out the data she has gathered. Use any opportunity to take at least one or two measurements.**

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# Messages from HRPO

The Highland Road Park Observatory will be closed on 24 June.



## FRIDAY NIGHT LECTURE SERIES

*all start at 7:30pm*

**9 September: “The Perseid Report”** (Postponed from 19 August) This brief presentation will summarize the successes and failures of this year’s [Perseid peak monitoring](#) across the globe. [Postponed from 19 August.]

**16 September: “The Amazing Voyage of Deep Space 1”** It's true....it really happened. The astounding “little spacecraft that could” had three modest goals among many—visit an asteroid, visit a comet and test the possibility of ion propulsion! As more and more distance separated the diminutive machine from its home planet, and one of its critical instruments failed, could it accomplish everything it was meant to do?

**23 September: “Uranus and Neptune”** One has an incredible tilt, the other has the strongest wind gusts in the Solar System! The farthest gas giants are described, with their moons and missions.

**30 September: “Journeys to the Moon”** Since antiquity, humankind has been voyaging to the Moon with imagination and curiosity. This presentation introduces the beginner to making his or her own observations. Neither a rocket nor a spacecraft is required!

## SCIENCE ACADEMY

*Saturdays from 10am to 12pm*

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

- **3 September: “Gamma Rays, X-Rays and Ultraviolet”**
- **10 September: “Visible Light”**
- **17 September: “Infrared, Microwaves and Radio Waves”**
- **24 September: “Expedition 11”**

## ONE-TIME CALLS FOR VOLUNTEERS

- Friday 2 September, 5:45pm to 7:45pm. *Two or three volunteers.* **Triple Conjunction with Moon.** Telescope operation. Moderate difficulty.
- Thursday 8 September, 3:30pm to 6:30pm. *Two or three volunteers.* **OSIRIS-REx Launch Party.** Telescope operation, physical science demonstrations, games. Easy to moderate difficulty.
- Saturday 24 September, 7pm to 10pm. *Two or three volunteers.* **Evening Sky Viewing Plus.** Telescope operation, physical science demonstrations. Easy 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” to go around in preparation for ARRL Field Day. Finally, we would more than welcome any who can help for at least one or two hours anytime during Fall Rocket Camp. We are asking any BRAS volunteers with time to assist. Thank you.

**UPCOMING HRPO EVENTS**

(click links for more detailed info)



**Triple Conjunction with Moon**

**Friday, 2 September from 5:45pm to 7:45pm  
at the Burbank Soccer Complex**

**No admission fee. For all ages. Binocular recommended.**

This astounding sight is a “one night only” thrill. Three planets will form a fairly large triangle (Mercury and Venus will be as far apart as possible for its proximity to still earn the label “conjunction”). The accompanying Moon will only be a scant 1.5 day-old—certainly some sort of vision test!



Please mark your calendars now:  
the next **International Astronomy Day**  
is **29 April 2017**, again from **3pm to 11pm.**

*What women have to say about it!*





# Observing Notes:

by John Nagle

## Capricornus

The Sea Goat

Position: RA 20 06 to -21 59, Dec. -08 40 to -27 69

### *Named Stars:*

**Algedi Prima (Alpha<sup>1</sup> Cap)**, “Prima Giedi”, “al-jady”, “the billy goat”, mag. 4.30, 20 17 38.86 -12 30 29.6, is a yellow-hued supergiant star, and is part of an optical binary with **Alpha<sup>2</sup> Cap**. **Alpha<sup>1</sup> Cap** is a binary star with a companion at mag. 9.2 and a separation of 0.65 arc seconds (shades of Dune, again!). **Alpha<sup>1</sup> and Alpha<sup>2</sup>** are separated by 0.11 degrees.

**Algedi Secundus (Alpha<sup>2</sup> Cap)**, “Secundi Giedi”, “al-jady”, “the billy goat”, mag. 5.38, 20 18 03.22 -12 32 41.5, is a yellow-hued giant star, and is also a multiple star with a companion star of mag. 11, which in itself is a binary star with its second component also at mag. 11.

**Dabih Major (Beta<sup>1</sup> Cap)**, “the butcher”, “al-dhâbih”, is a binary system. **Beta<sup>1</sup> Cap**, mag. 3.05, 20 21 00.65 -14 46 53.0, is an orange-hued giant star, with three companions. There are two blue-white main sequence dwarf stars of mag. 7.20. Separation of primary to 2<sup>nd</sup> star is 0.05 arc seconds and has an orbital period of 3.77 years. The third star orbits the second every 8.7 days.

**Dabih Minor (Beta<sup>2</sup> Cap)**, “the butcher”, “al-dhâbih”, mag. 6.09, 20 20 46.52 -14 47 05.6, is a blue-white hued star, with a companion that has an atmosphere unusually rich with mercury and manganese. **Beta<sup>2</sup> Cap** is separated from **Beta<sup>1</sup> Cap** by 3.5 arc minutes, or 0.34 light years, and completes one orbit every 700,000 years.

**Nashira (Gamma Cap)**, “the bearer of good news”, mag. 3.69, 21 40 05.34 -16 39 44.10, is a blue-white giant star, classified as an **Alpha<sup>2</sup> Canum Venaticorum** type – a chemically peculiar star with strong magnetic fields.

**Deneb Algedi (Delta Cap)**, “Sheddi”, “danab al-jady”, “the tail of the goat”, mag. 2.85, 21 47 02.29 -16 07 35.6, is a four star system. **Delta Cap A** is a white giant star, with the system being a spectroscopic binary, whose two components are of mag. +3.2 and +5.2, separated by 0.0018 arc seconds. **Delta Cap A** is also an eclipsing binary, with its unresolved companion orbiting every 1.022768 days. Two other stars are thought to orbit further out in the system. **Delta Cap C**, at 16<sup>th</sup> magnitude, is separated from the primary by one arc minute, while **Delta Cap D**, at 13<sup>th</sup> magnitude, is two arc minutes away from the primary star.

**Kastra (Epsilon Cap)**, mag. 4.51, 21 37 04.82 -19 27 57.6, is a triple star system.

**Marakk (Zeta Cap)**, “loins”, mag. 3.77, 21 26 40.03 -22 24 41.0, is a double star composed of a yellow supergiant star and a white dwarf star. The primary is a Barium star that is particularly notable for having an overabundance of praseodymium.

**Armus (Eta Cap)**, mag. 4.82, 21 04 24.32 -19 51 17.8, is a star in **Capricornus**.

**Dorsum (Theta Cap)**, “the back of the goat”, mag. 4.08, 21 05 56.78 -17 13 57.8, is a white main sequence dwarf star.

**Kuh (Mu Cap)**, mag. 5.07, 21 53 17.58 -13 33 06.5, is a suspected variable star.

**Alshat (Nu Cap)**, mag. 4.77, 20 20 39.81 -12 45 32.6, is a star in **Capricornus**.

**Okul (Pi Cap)**, mag. 5.08, 20 27 19.20 -18 12 42.1, is a double star with a blue-white primary and a white-hued secondary at mag. 8.3.

**Bos (Rho Cap)**, mag. 4.77, 20 28 51.62 -17 48 49.2, is a star in **Capricornus**.

**Baten Algedi (Omega Cap)**, “the belly of the goat”, mag. 4.12, 20 51 49.30 -26 55 08.9, is a red giant variable star.

### ***Deep Sky:***

**M 30 (NGC 7099)**, “The Jellyfish Cluster”, mag. 7.5, 21 40.4 -23 11, 9’ in size, is a globular cluster, with a medium concentration of stars; bright, large, slightly elongated. Brightest stars in the cluster are mag. 12 red giant stars. Having suffered a core collapse, the core is now only 0.12 arc minutes in size. Located about ¾° south and 3° east of **Zeta Cap**, or 25’ west and slightly north of mag. 5.5 **41 Cap**. A point-like ultra-violet source was discovered in 1983, but was found to be a post-red giant star beginning to evolve toward the white dwarf cooling sequence.

**There are 18 NGC and 11 IC objects beyond mag. 10, see me for a listing.**

### ***Other Stars:***

**Psi Cap**, mag. 4.13, 20 46 05.77 -25 16 13.9, is a yellow-white giant star.

**46 Cap**, mag. 5.10, 21 45 00.25 -09 04 56.7, is a part of *Sa’d al Su’nd*.

**41 Cap**, mag. 5.24, 21 42 00.64 -23 15 45.5, is a double star with magnitudes of 5.3 and 13.0.

**HD 192310**, mag. 5.73, 20 15 16.58 -27 01 57.1, is a suspected variable star with two planets in orbit.

**Omicron Cap**, mag. 5.94, 20 29 53.89 -18 34 58.7, is a binary star, with **Omicron Cap B**, at mag. 6.74, 20 29 52.58 -18 35 10.2.

**HD 204313**, mag. 7.99, 21 28 12.21 -21 43 34.5, has three planets in orbit.

**HD 202206**, mag. 8.08, 21 14 57.77 -20 47 21.15, has a brown dwarf star and a planet in orbit.

**HD 204941**, mag. 8.45, 21 32 24 -20 57 27, has a planet in orbit.

**Σ 2699**, mag. 8-9?, 20 34.2 -12 55

**HD 197027**, mag. 9.15, 20 41 54.63 -27 12 57.4, is a solar twin.

**PSR B2045-16**, 20 48 35.45 -16 16 43.0, is a pulsar star.

**There is one star of note beyond mag. 10, see me for it.**

## ***Sky Happenings: September, 2016***

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



- Sept. 1<sup>st</sup> - **New Moon** occurs at 4:03 AM CDT,  
Annular eclipse of the **Sun** is visible in central **Africa** along a line from **Gabon** to **Madagascar**.
- Sept. 2<sup>nd</sup> - **Asteroid Ceres** is stationary at 8 AM CDT,  
**Neptune** is at opposition at 12:00 noon CDT,  
The **Moon** passes 6° north of **Mercury** at 12:00 noon CDT,  
The **Moon** passes 0.4° north of **Jupiter** at 5 PM CDT.
- Sept. 3<sup>rd</sup> - The **Moon** passes 1.1° north of **Venus** at 6 AM CDT.
- Sept. 4<sup>th</sup> - The waxing crescent **Moon** is low in the west with **Spica** about 5° to its lower left.
- Sept. 6<sup>th</sup> - The **Moon** is at apogee (251,689 miles from **Earth**) at 1:45 PM CDT.
- Sept. 8<sup>th</sup> - The **Moon** passes 4° north of **Saturn** at 4PM CDT,  
Evening – The **Moon**, just shy of first quarter, is some 3°-4° above **Saturn**. Brighter **Mars** flames 9° to the left of **Saturn**, while red **Antares** twinkles 6° below and a bit left of **Saturn**.
- Sept. 9<sup>th</sup> - **First Quarter Moon** occurs at 6:49 AM CDT,  
The **Moon** passes 8° north of **Mars** at 9 AM CDT.
- Sept. 12<sup>th</sup> - **Mercury** is in inferior conjunction at 7 AM CDT.

- Sept. 15<sup>th</sup>** - The **Moon** passes 1.2° north of **Neptune** at 3 PM CDT.
- Sept. 16<sup>th</sup>** - **Full Moon** occurs at 2:05 PM CDT,  
Evening to Night – A fairly deep penumbral lunar eclipse is visible from **Europe, Asia, Africa, and the Pacific.**
- Sept. 17<sup>th</sup>** - **Venus** passes 3° north of **Spica** at 6 PM CDT.
- Sept. 18<sup>th</sup>** - The **Moon** is at perigee (224,872 miles from **Earth**) at 12:00 noon CDT,  
The **Moon** passes 3° south of **Uranus** at 12:00 noon CDT.
- Sept. 21<sup>st</sup>** - **Mercury** is stationary at 5 AM CDT,  
The **Moon** passes 0.2° north of **Aldebaran** at 6 PM CDT.
- Sept. 22<sup>nd</sup>** - **Autumn** begins (**Autumnal Equinox**) in the **Northern Hemisphere** at 9:21 AM CDT.
- Sept. 23<sup>rd</sup>** - **Last Quarter Moon** occurs at 4:56 AM CDT.
- Sept. 25<sup>th</sup>** - **Pluto** is stationary at 10 PM CDT.
- Sept. 26<sup>th</sup>** - **Jupiter** is in conjunction with the **Sun** at 2 AM CDT.
- Sept. 27<sup>th</sup>** - The waning crescent **Moon** is about 6° to the upper right of **Regulus.**
- Sept. 28<sup>th</sup>** - Dawn – The zodiacal light or “false dawn” is visible in the east before sunrise from dark locations at north temperate latitudes for the next two weeks. Look for a tall, broad pyramid of light rising up through **Leo, Cancer, and Gemini,**  
**Mercury** is at greatest western elongation (18°) at 3 PM CDT.
- Sept. 29<sup>th</sup>** - Dawn – use binoculars to search very low in the east 30 to 40 minutes before sunrise to find the thin crescent **Moon** less than 2° below **Mercury,**  
The **Moon** passes 0.7° south of **Mercury** at 6 AM CDT,  
Asteroid **Parthenope** is at opposition at 8 AM CDT.
- Sept. 30<sup>th</sup>** - **New Moon** occurs at 7:11 PM CDT.

## *Planets:*

**Mercury** – **Mercury** passes between the **Sun** and **Earth** at inferior conjunction on September 12<sup>th</sup>, and the springs into the morning sky 10 days later to start its finest morning appearance of the year. On September 22<sup>nd</sup>, **Mercury** appears 8° above the eastern horizon a half-hour before sunrise. Shining at magnitude +0.9, **Mercury** will show up clearly through binoculars, and to the naked eye once you have spotted it. A telescope will reveal an 8.6” diameter disk that is just 21% lit. On September 28<sup>th</sup>, **Mercury**, at greatest western elongation (18°), will shine at magnitude -0.5 and will climb 11° high in the east 30 minutes before sunup. Through a telescope, **Mercury** appears 7.1” across and is half lit. On September 29<sup>th</sup>, the **Moon** slides by 1° below **Mercury.**

**Venus** – Watch the western sky during evening twilight to catch **Venus**, which will climb higher with each passing day. On September 2<sup>nd</sup>, **Venus** will be at magnitude -3.8. On September 3<sup>rd</sup>, the **Moon, Venus, and Jupiter** form a line spanning some 14°, with **Venus** midway between the other two. All three lie in **Virgo.** During Septembers 2<sup>nd</sup> week, **Venus** grows more prominent. On the 17<sup>th</sup>, **Venus** passes 3° north of **Virgo’s** brightest star, 1<sup>st</sup> magnitude **Spica.** On the month’s final day, **Venus** exits **Virgo** and enters **Libra.**

**Jupiter** – On the evening of September 1<sup>st</sup>, **Jupiter** glimmers 5° to the lower right of **Venus**, quite low in the evening twilight. On September 2<sup>nd</sup>, at twilight, a slender two day old **Moon** is about 1° to **Jupiter’s** left, with **Jupiter** shining at magnitude -1.7, with the pair only 4° high in the west a half hour after sunset. On September 3<sup>rd</sup>, the **Moon, Venus, and Jupiter** form a line spanning some 14°, with **Venus** midway between **Jupiter** and the **Moon, in Virgo. Jupiter** will slip out of view during the 2<sup>nd</sup> week of September, passing through superior conjunction with the **Sun** on September 26<sup>th</sup>, and so is lost from view until it reappears in the dawn sky in early October.

**Saturn** – As September dawns, **Saturn** stands 6° northwest of **Mars**, shining at magnitude +0.5, as it reaches eastern quadrature (90° east of the **Sun**). **Saturn’s** disk spans 16”, with the rings measuring 37” across and at a tilt of 26° to our line of sight. **Titan**, the biggest and brightest of **Saturn’s** moons, shines at 8<sup>th</sup> magnitude and will show up through any telescope. You can find **Titan** due north of **Saturn** on September 9<sup>th</sup> and 25<sup>th</sup>, and due south of the planet on the 16<sup>th</sup>. A 4-inch telescope (or larger) will bring in four additional satellites. **Iapetus**, at 10<sup>th</sup> magnitude on September 8<sup>th</sup>, will show its ice-covered hemisphere fully facing **Earth.** It then lies 8.3’ west of **Saturn. Iapetus** will have faded 1 magnitude when it passes 2.1’

due north of **Saturn** on September 28<sup>th</sup>. **Titan** will lie 2.6' east of **Saturn** at this time. Three 10<sup>th</sup> magnitude moons circle **Saturn** inside **Titan's** orbit. **Tethys**, **Dione**, and **Rhea** all lie within 1' of the ring's outer edge and show up on every clear night.

**Uranus** – **Uranus** rises as evening twilight fades, and stands high in the southeast at midnight local daylight time. **Uranus** is in **Pisces**, and can be spotted with binoculars. Under excellent conditions, a keen eyed observer can spot the 5.7 magnitude planet without optical aid. To find **Uranus**, start at 5<sup>th</sup> magnitude **Mu Piscium**. In early September, **Uranus** lies 2.5° due north of **Mu Piscium**. Point your telescope at **Uranus** and you will see a distinctly blue-green disk measuring 3.7" across.

**Neptune** – **Neptune** reaches opposition on September 2<sup>nd</sup>, rising with the faint stars of **Aquarius** just as the **Sun** sets. **Neptune** shines at magnitude 7.8, and moves slowly relative to the background stars. You can find **Neptune** with binoculars, in the same field of view as 4<sup>th</sup> magnitude **Lambda Aquarii**. **Neptune** lies 1.3° southwest of **Lambda Aquarii** at opposition (September 2<sup>nd</sup>). The gap grows to 2° by late September. A telescope reveals a disk of just 2.4" in diameter, and glows a subtle blue-gray hue.

**Pluto** – The dwarf planet lies reasonably high in the south-southwest among the stars of northern **Sagittarius** in the hour after darkness falls. **Pluto** glows dimly at magnitude 14.3, and you will need an 8-inch or larger telescope to see it visually. **Pluto** lingers some 0.5° northwest of 4<sup>th</sup> magnitude **Omicron Sagittarii**. To confirm sighting, sketch or image view, and return to it a few nights later to identify the object that shifts position.

**Sun** – On September 1<sup>st</sup>, the **Sun** experiences an annular solar eclipse as seen from parts of **Africa**. The **Sun** crosses the **Autumn Equinox** at 9:21 AM CDT on September 22<sup>nd</sup>, marking the start of **Autumn** in the **Northern Hemisphere** and **Spring** in the **Southern Hemisphere**.

**Moon** – On September 2<sup>nd</sup>, an ultra-thin lunar crescent will slice very near **Jupiter** soon after sunset. A thicker **Moon** is well to the upper left of **Venus** on the 3<sup>rd</sup>, and above faint **Spica** on the 4<sup>th</sup>. The **Moon** is above **Saturn** on September 8<sup>th</sup>, and the far upper left of **Mars** on the 9<sup>th</sup>. On September 16<sup>th</sup>, the **Moon** undergoes a deep penumbral eclipse visible from much of the **Eastern Hemisphere**. A waning lunar crescent is just below **Mercury** at dawn on September 29<sup>th</sup>.

**Asteroids** – Asteroid **2 Pallas** begins September in east-central **Equuleus**. It then drops southward, passing just south of three 9<sup>th</sup> magnitude stars on September 9<sup>th</sup>. To positively identify **2 Pallas**, look for its displacement relative to this background over a night or two. The 325 mile wide asteroid then slides 1° west of 4<sup>th</sup> magnitude **Alpha Equulei** on September 11<sup>th</sup>.

Asteroid **1 Ceres** and **18 Melpomene** will both fit in the same low power view near the head of **Cetus** for a few nights around September 7<sup>th</sup> and 8<sup>th</sup>. They will be 0.8° apart those nights with **Ceres** at magnitude 8.2 and **Melpomene** at 8.8. They remain within 1° of each other from September 5<sup>th</sup> through the 10<sup>th</sup>, well up in the east after about midnight. On September 24<sup>th</sup>, **Ceres** will be at **69 Cetus**, and on the 25<sup>th</sup>, **Melpomene** will be about .3° from **75 Cetus**.

**Comets** – Comet **43 P/Wolf-Harrington** resides in **Cancer** during the first half of September. To see this 12<sup>th</sup> magnitude snowball, you will need an 8-inch or larger telescope and a dark, haze free site with a clear view to the east. On September 9<sup>th</sup>, **43 P** will be about ½° north of **29 Canceri**, and on the 14<sup>th</sup> it will be about 0.5° south of **45 Canceri**, and on the 15<sup>th</sup> it will be about 0.3° south of **50 Canceri**.

**Meteor Showers** – The **Aurigids** peak the night of August 31 /September 1 and in the early morning hours of the first could deliver up to 6 “shooting stars” per hour. The **Epsilon Perseids**, which peak on the morning of September 9<sup>th</sup>, will have the **Moon** setting before midnight local daylight time, bringing on dark skies before dawn. The **Epsilon Perseids** radiate from a point near **Algol**, which climbs nearly overhead just before twilight begins. Observers can expect to see an average of five meteors per hour.



## *When to View the Planets:*

### Evening Sky

Venus (west)  
Mars (south)  
Jupiter (west)  
Saturn (southwest)  
Neptune (southeast)

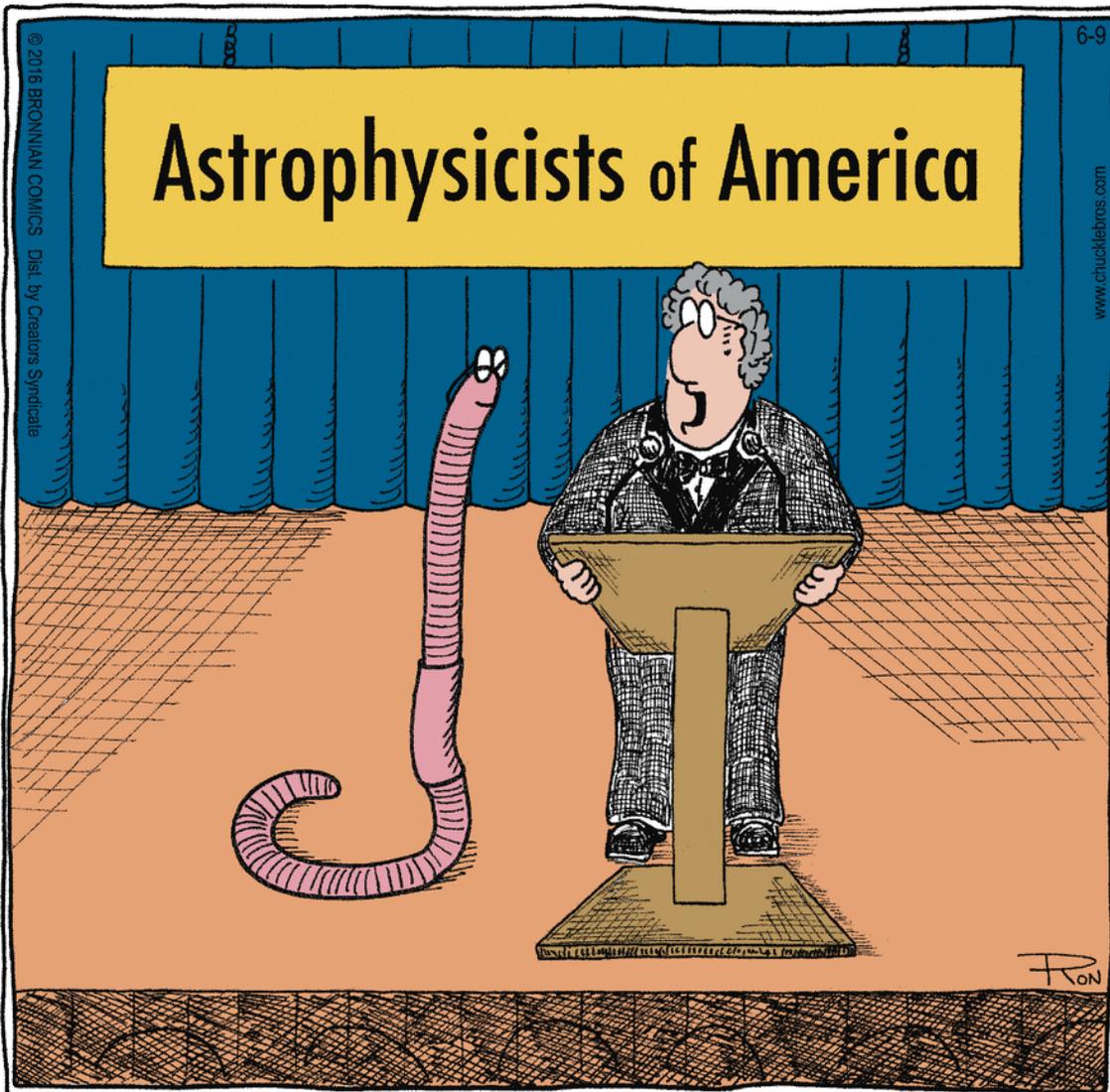
### Midnight

Uranus (southeast)  
Neptune (south)

### Morning Sky

Mercury (east)  
Uranus (southwest)  
Neptune (west)

**DARK SKY VIEWING · PRIMARY ON SEPTEMBER 3RD, SECONDARY ON SEPTEMBER 24TH**



**“And now, it is my great pleasure and honor to introduce Professor Dawormski, who will attempt to explain his latest wormhole theory.”**

# Mythology:

## Capricornus – the sea goat

Capricornus is an unlikely looking creature, with the head and forelegs of a goat and the tail of a fish. The constellation evidently originated with the Sumerians and Babylonians, who had a fondness for amphibious creatures; the ancient Sumerians called it **SUHUR-MASH-HA**, the goat-fish. But to the Greeks, who named it **Aegoceros** (goat-horned), the constellation was identified with **Pan**, god of the countryside who had the horns and legs of a goat.



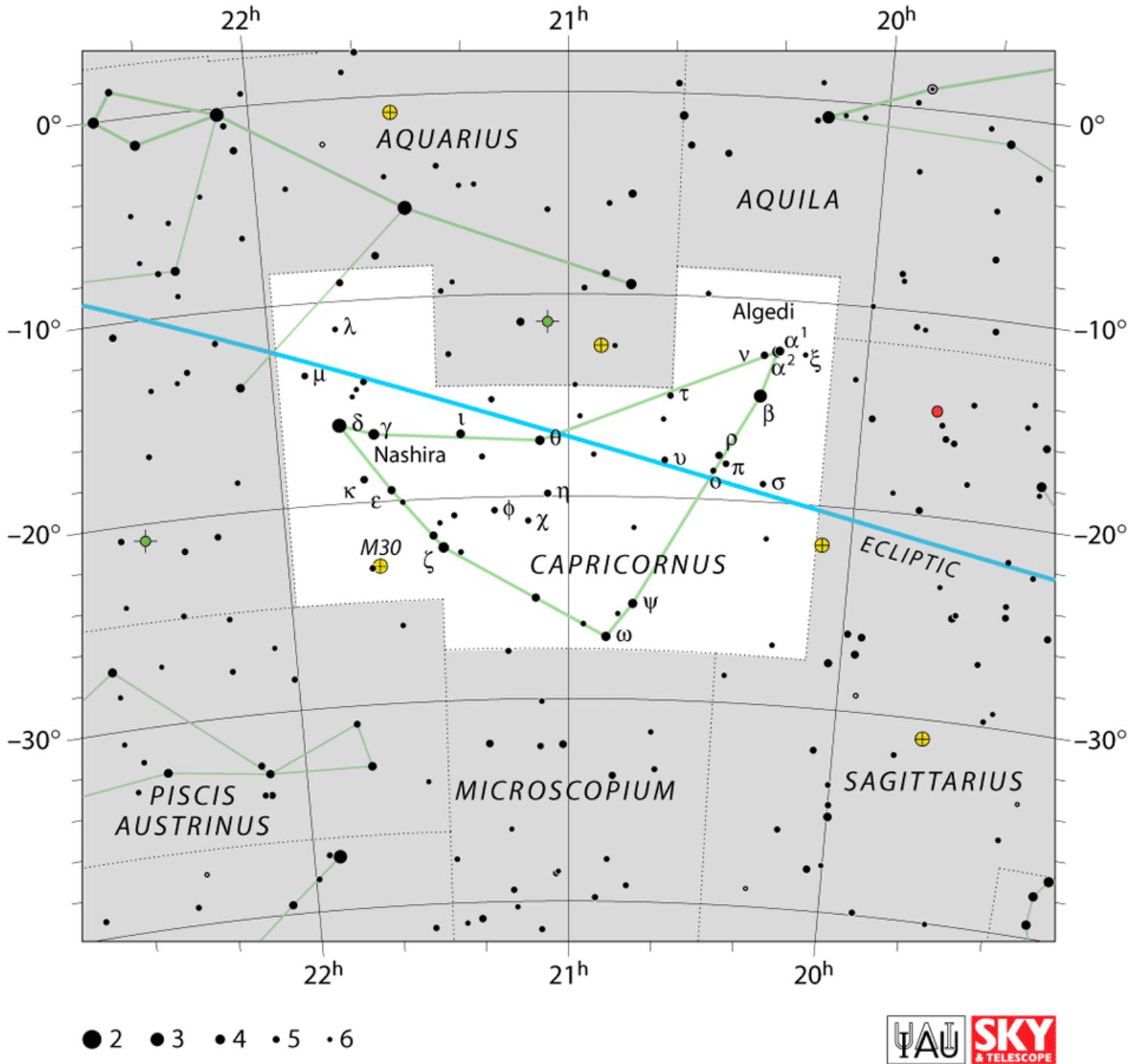
**Pan**, a playful creature of uncertain parentage, spent much of his time chasing females or sleeping it off with a siesta. He could frighten people with his loud shout, which is the origin of the word “panic”. One of his offspring was **Crotus**, identified with the constellation **Sagittarius**. **Pan**’s attempted seduction of the nymph **Syrinx** failed when she turned herself into a handful of reeds. As he clutched the reeds the wind blew through them, creating an enchanting sound. **Pan** selected reeds of different lengths and stuck them together with wax to form the famous pipes of **Pan**, also called the *syrinx*.

**Pan** came to the rescue of the gods on two separate occasions. During the battle of the gods and the **Titans**, **Pan** blew a conch shell to help put the enemy to flight. According to **Eratosthenes** his connection with the conch shell accounts for his fishy nature in the sky, although **Hyginus** says somewhat absurdly that it is because he hurled shellfish at the enemy. On a later occasion **Pan** shouted a warning to the gods that the monster **Typhon** was approaching, sent by **Mother Earth (Gaea)** against the gods. At **Pan**’s suggestion the gods disguised themselves as animals to elude the monster. **Pan** himself took refuge in a river, turning the lower part of his body into a fish.

**Zeus** grappled with **Typhon**, but the monster pulled out the sinews from the hands & feet of **Zeus**, leaving the god crippled. **Hermes** and **Pan** replaced the sinews, allowing **Zeus** to resume his pursuit of **Typhon**. **Zeus** cut down the monster with thunderbolts and finally buried him under **Mount Etna** in **Sicily**, which still belches fire from the monster’s breath. In gratitude for these services, **Zeus** placed the image of **Pan** in the sky as the constellation **Capricornus**.

The star **Alpha Capricorni** is variously called **Algedi** or **Giedi**, from the Arabic *al-jady* meaning “the kid”, the Arabic name for the constellation. **Delta Capricorni** is called **Deneb Algedi**, from the Arabic for “the kid’s tail”. The tropic of **Capricorn** is the latitude on **Earth** at which the **Sun** appears overhead at noon on the winter solstice, around December 22<sup>nd</sup>. In Greek times the **Sun** was in **Capricornus** on this date, but the effect of precession means that the **Sun** is now in **Sagittarius** at the winter solstice.





The End