



Monthly Meeting Monday, October 8th at 7PM at HRPO

(Monthly meetings are on 2nd Mondays, Highland Road Park Observatory).

Presenter: Stephen Tilley on “Comet and Asteroid Observing Using Internet Telescopes”

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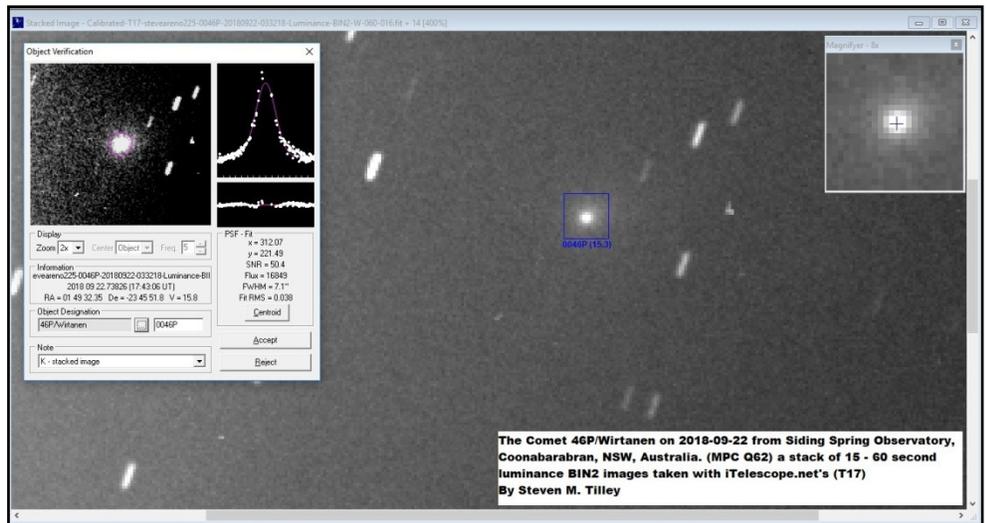
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President's Message

We are now moving into fall and longer nights. As we move towards winter and the end of the year, we can look forward with "guarded" optimism to Comet 46P/Wirtanen. The University of Maryland's Comet Wirtanen Campaign webpage (http://wirtanen.astro.umd.edu/46P/46P_status.shtml) reports visual observations of the comet are following Yoshida's prediction suggests that the comet "may" reach naked eye brightness in December.



REMINDERS:

- ❖ We plan to have a picnic at LIGO on Science Saturday, November 17, 2018. I hope to see you there.
- ❖ The BRAS Business Meeting will be Wednesday October 3, HRPO at 7 PM.
- ❖ The BRAS Monthly Meeting will be Monday October 8, HRPO at 7 PM. I will give a talk on Comet and Asteroid Observing using internet telescopes.
- ❖ If you have not reserved your member pin yet, please come to a meeting to pick one up.
- ❖ Please check with Ben Toman if you are willing to help with our Outreach Requests. Remember, Outreach to our community is a lot of what we do.
- ❖ Our astrophotographers (or members wishing to learn) should check with Scott Louque about BRAG (our new acronym stands for BRAS Astrophotography Group.)

TELESCOPE RAFFLE:

A vintage (c. 2001) Meade ETX 90EC with hard case. 90 Maksutov-Cassegrain reflector, 1250mm focal length (f13.8) on an electronic fork mount with built-in flip-mirror diagonal, additional right angle diagonal, and 8x21 finderscope. It includes two Meade super Plossl eyepieces (26mm & f9.6mm), Yellow, Blue, Orange, and Neutral Density planetary filters, an ETX Autostar Controller for electronic alignment and goto positioning. It has built-in battery power from 8 AA batteries and a connector for an external power source. It is capable of tracking if it is set into polar alignment mode which requires an additional purchase of a field tripod or tabletop accessory.

At this time, everything has been checked out on the scope ***EXCEPT the GOTO function.*** (It's been too cloudy to get outside for a good test run.) We are assuming that it works, but just know that the scope is being raffled ***AS IS.*** This is a great opportunity to get your hands on a great little scope with accessories. You'll be able to take a look at it at the meetings." Tickets are \$5 each. Non members are eligible, and you need not be present to win.

NOTICE: Thank you Krista Dison, for resuming her position as Secretary for the remainder of 2018.

Clear Skies

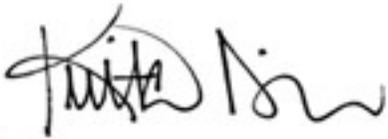
Steven M. Tilley

Steven M. Tilley, President



Secretary's Summary of September Meeting

- President Steven Tilley calls the meeting to order at 7:08PM.
- 28 members in attendance.
- Steven gives the floor to Vice President, Scott Louque, to introduce the guest speaker.
- -Scott introduces, Dr. Robert Hynes of LSU's Department of Physics and Astronomy as the guest speaker.
- Dr. Hynes gives a lecture on Binary X-Rays, their discovery, and his work in studying black holes and neutron stars.
- Dr. Hynes answered questions after his lecture, and also invited those in attendance to Astronomy on Tap at the Varsity Theater on Wednesday, September 12th.
- Steven asked the new members in attendance to introduce themselves.
- Deep South Regional Star gaze representative, Barry Simon, updated the club on the new location at White Horse Christian Retreat Center near Sandy Hook, MS. He also gave out information on how to sign up and provided pictures of the facility.
- Scott Cadwallader showed the club this year's raffle telescope, a Meade ETX 90EC Maksutov-Cassegrain reflector. He explained the current state of the telescope.
- Steven gave Dr. Hynes a pin for being a guest speaker.
- Don Weinell announced that the Rockefeller Star Gaze will take place the first weekend of February.
- HRPO manager, Chris Kersey, asked for volunteers for upcoming observatory events. He also mentioned there will be some upcoming city council meetings he will attend to discuss light pollution.
- Coy Wagoner talked about his recent receipt of the Master Observer award from the Astronomical League.
- Scott L invited the club to the next astrophotography meeting at Chelsea Wall's home on Friday, September 14th.
- Chris K asked for volunteers for the upcoming BRAS outreaches.
- Raffle was held.
- Meeting adjourns at 8:45PM.



Submitted by Krista Dison, BRAS Secretary

2018 Officers:

President: Steven M. Tilley
Vice-President: Scott Louque
Secretary: Krista Dison---
Treasurer: Trey Anding

BRAS Liaison for BREC:

Chris Kersey

BRAS Liaison for LSU:

Greg Guzik

Committees/Coordinators:

Light Pollution:

John Nagle

Newsletter:

Michele Fry

Observing Notes:

John Nagle

Outreach:

Ben Toman

Webmaster:

Frederick Barnett




BRAS Outreach Report

Hi Everyone,

We had a pretty nice September and now we're moving into a busy October. Our outing at the Mid City Maker's Market was a lot of fun. We even bumped into Dr. Boyajian with her kids on a nice evening out.

Unfortunately, our 1st outing at Perkins Rowe for Sidewalk Astronomy ended early due to poor weather. Until then, we were getting a good amount of people talking to us and even got to see the Moon for a few minutes.

This month's thanks go to: Chris K., Scott L., Scott C., John N., Krista D., Ashley T., Ben T., Russell P. and Craig B. We couldn't do these events without our volunteers!

A big thank you to Scott C., as well, for representing BRAS in a series of live webinar workshops put on by the Night Sky Network over the course of the next few weeks. He will be learning a lot about telescopes and optics and should get some great ideas on how we can do some more educational outreach in the community. Also, by being selected to participate in this workshop, BRAS will receive 25 Galileo Scopes to use in our outreach endeavors.

We still need (and are kind of desperate for) some help this coming Saturday, October 6th. If we don't get more volunteers for the Maker Faire, we may not be able to participate. Please take a look at the events below and let me know ASAP if you can come help out.

Upcoming Events

Saturday, October 6th

10am-5pm

Mini Maker Faire (Baton Rouge Main Library)

info booth, demos, solar observing

6-8 volunteers or more needed

Saturday, October 6th

8:30-?

Boy Scout Campout (Lamar Dixon Center, Gonzales)

telescope viewing

3 volunteers needed

Friday, October 12th

7pm-8:30

Girl Scout Campout (Sorrento)

telescope viewing

1-2 volunteers needed

Mid City Maker's Market

a few pics by Ben Tomen



Scott C. with his scope showing the Sun to some of Dr. Boyajian's kids



Krista D., staffing the demo/info table

Ben Toman, Outreach Coordinator





BRAS Light Pollution Committee Report

This committee meets at 6:15, same day as the 7:00 BRAS Business Meeting
(which normally takes place on the Wednesday before the Monthly Meeting)
Everyone is welcome to join in.

First, please check out the Member’s Corner for an invitation from Thomas Halligan.

The Light Pollution Committee discussed the Louisiana House Concurrent Resolution N0. 72 – This resolution is to form a task force to study and make recommendations relative to the observance of daylight savings time, whether or not to keep it or, like two other states, to go to standard time all year.

The LPC Committee has drafted and approved a letter to the House task force stating the position of BRAS on this subject. Here is the letter, as approved:

Dear Sir or Madam,

We the members of the Baton Rouge Astronomical Society would like to express our opinion in favor of the elimination of the biannual time change, with the express purpose of the removal of Daylight Saving Time and the adoption, year-round, of Standard Time. Due to the length of the days during the summer, astronomers have severely restricted time to access to the evening sky. The implementation of Daylight Saving Time further restricts our evening observing time by an hour. The restoration of Standard Time would be beneficial to us by allowing us to have more time in the evening for our personal observations as well as increasing our ability to serve the public through educational outreach.

Thank you for your consideration.

(I was not personally able to attend the meeting. These notes were gathered by talking to other members.)

John R. Nagle

John Nagle, Chairman

P.S. Every year BRAS presents a Good Lighting Award to a company that uses BEST outdoor lighting practices. If you notice a business in EBRP that uses Full Cutoff lighting fixtures, please jot down and send their Business name, address, date and description to me at jonagle@cox.net. This would be much appreciated.

The Progression from Bad to Best Lighting Fixtures that decrease Light Pollution		
No Cutoff - BAD	Partial Cutoff - BETTER	Full Cutoff - BEST
		



BRAS Astrophotography Group (BRAG) - August Meeting

The September meeting of BRAG was held at Chelsea Lavigne Wall's house in Ponchatoula on the 14th, with Chelsea, Krista Dison, Scott Cadwallader, Chris Desselles, John Nagle, and Merrill Hess. Chelsea served red beans and rice, white beans and rice, and cornbread. In a small field behind her house were tables and AC power cords for us to use. Krista Dison, Scott Cadwallader, and John Nagle (two telescopes- ES 127 triplet and a Celestron C5) set up their telescopes before dusk. John had some trouble removing the counterweight bar from his GEM head (stored internally in the head), and Chris Desselles helped with a towel and vise grips. When it became dark enough, the moon, mars, Jupiter, and Saturn were available for viewing. it began to rain. A mad scramble ensued to cover their equipment with tarps, canvas bags, and trash bags. We retired to the building in Chelsea's backyard, telling Boudreaux jokes awhile, then finally decided to dry off and pick up our equipment. Merrill's friends showed up (one a former BRAS member, and we visited awhile and advised Chelsea on how to correct a problem with her scope.

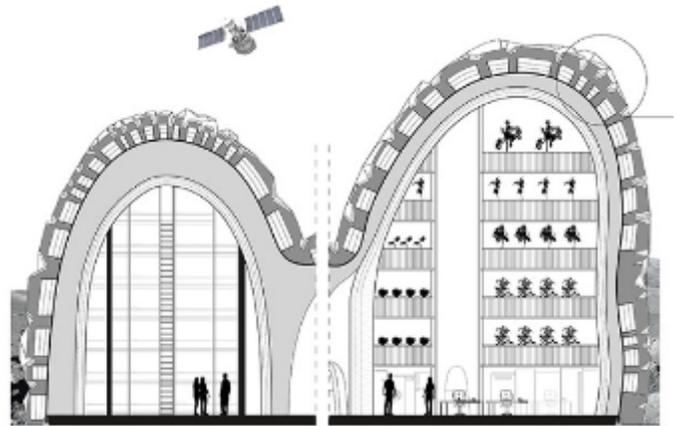
The October meeting is scheduled for Friday, October 5th at Scott Louque's house. For more detailed information, contact Scott L.

TESTLAB'S MOONTOPIA??????????????

What might a colony on the moon be like. (see masthead).

How built? Would you like to go there? Check it out here:

<https://medium.com/@pionic/moontopia-lunar-colony-visions-revealed-f255913a87a1>



Testlab – are they the future of lunar living and space exploration?

“The concept of the lunar Testlab is simple – gradually populate the moon over time.”



Free The Milky Way Campaign

used to be the 20/20 Vision Campaign, recently renamed by the Light Pollution Committee.

This campaign's goal was to raise the SQM measurement at HRPO's back viewing pad to 20.0 by November 2020. We decided to keep the effort going until the goal is reached, however long that takes.



Recent Entries in the BRAS Forum

Below are selected additions to the BRAS Forum. There are also nine active polls. The Forum has reached 5500 posts.

NASA Administrator Testifies on [American Leadership in Space](#)
[Saturn's Hexagon](#) Could be Giant Tower
Is [Pluto's Dwarf Planet Demotion](#) Being Challenged?
Iridium Company Creates "[Flarewell](#)" Page
[Mars Remains Brighter Than -1.0](#) through 16 October
[Observe the Moon Activities](#) to be Incorporated into Spooky Spectrum
[G1 and G2 Geomagnetic Storms in September](#)
[Mild Surface Activity](#) on Sun in September
New Mexico Observatory [Mysteriously Closed](#)
[Aten Asteroid 2018RC](#) Passes Closer Than Moon
New Horizons to Visit "[Ultima Thule](#)" This New Year's
BRAS President Steven Tilly Assists in Imaging [Giacobini-Zinner](#)
Baton Rouge Area Prepares for [Comet Wirtanen](#)
[White Dwarf Talk](#) at LSU on 27 September
[Cosmic Ray Activity](#) Increases





Members' Corner

*Here's where BRAS members can submit articles and photos about their astronomy-related accomplishments and adventures outside of BRAS activities (as if there were any spare time for such things!)
Send your contributions to Michele at newsletter@brastro.org*

Hi all--I hope everyone is doing well!

For those of you who may not have met me yet, my name is Thomas J. Halligan. I am a member of BRAS and active on our Light Pollution Committee; Another of my volunteer efforts is to manage the **RENEW Book Club (*Reading Engaging Nonfiction that Expands our Worldview*)** at the East Baton Rouge Parish Library. I think our next book will be of interest to BRAS members and especially to those interested in light pollution..

It's called ***Brilliant: The Evolution of Artificial Light*** and its author is a woman named Jane Brox. The topic is pretty straightforward--the history of artificial light and how we have learned to live with it.

RENEW will meet at the East Baton Rouge Parish Library on Tuesday, October 16th, 2018 at 7:00 pm in Conference Room A on the second floor of the library building. The public is welcome to attend.

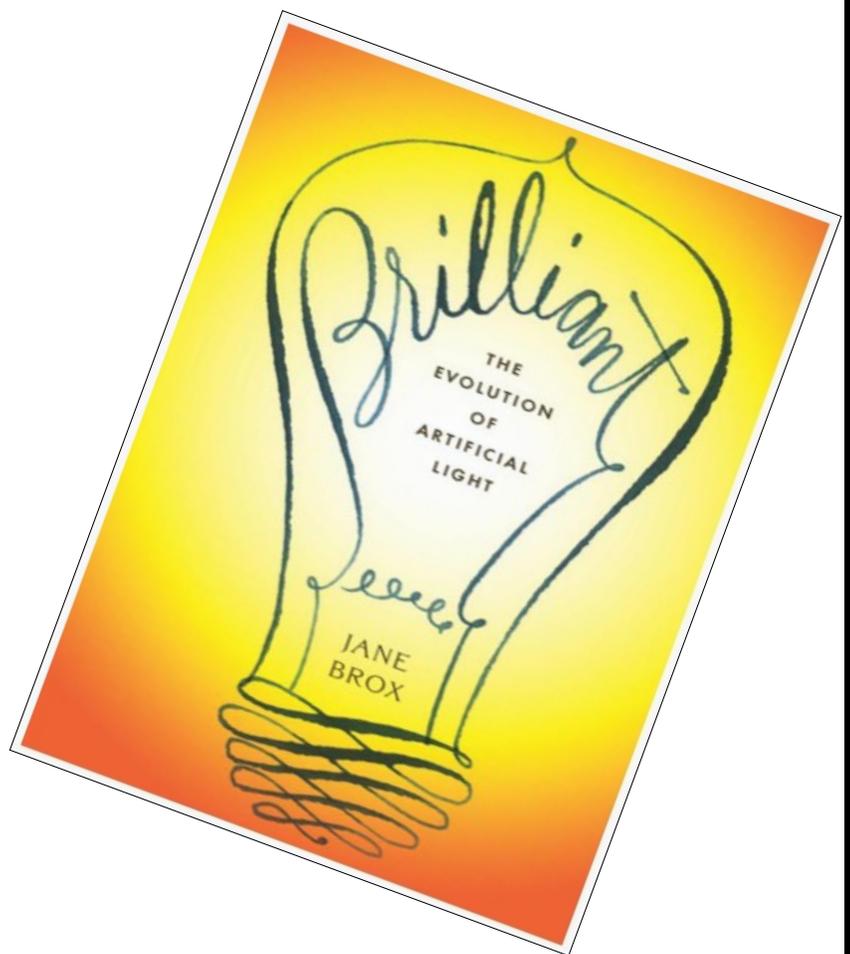
If you want to reserve a copy, here are the links (one for paper copies and one for ebook copies)--

- [Print](#)
- [Ebook](#)

I'm hoping at least a few BRAS members will check it out, tell your friends, and let me know if you have any questions.

Take care and God bless,

Thomas J. Halligan





Messages from HRPO

Highland Road Park Observatory

FRIDAY NIGHT LECTURE SERIES

all start at 7:30pm

5 October: “Wonders of the Fall Sky” BREC Education Curator Amy Brouillette will take the audience on a fascinating tour of [Baton Rouge’s autumn season](#). She’ll highlight the celestial gems that will sparkle throughout the next three months—gems visitors will be able to see live if they continue to visit HRPO!

12 October: “Apollo 7” Donn Eisele, Wally Schirra and Walter Cunningham demonstrated [the ability of the command and service module](#)—paving the way for our trips to the Moon that eventually led to the landings.

19 October: “The Spooky Sampler” The last open Friday before Halloween is used to highlight a smorgasboard of unsettling stories, images, [objects](#) and theories—for our adult audience.

SCIENCE ACADEMY

Saturdays from 10am to 12pm

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

6 October: “Fall Day”

13 October: “Surveying the Sun”

27 October: “Cadet’s Choice”



ONE-TIME CALLS FOR VOLUNTEERS

***Saturday 13 October, 12pm to 2pm.** *Two or three volunteers.* [Solar Viewing](#). Telescope operation for Sun viewing; front desk staffing. Moderate difficulty.

***Saturday 20 October, 6pm to 10pm.** *Three or four volunteers.* [The Spooky Spectrum](#). Telescope operations; chemistry demo assistance; front desk; games; . Moderate difficulty.

***Tuesday 23 October, 8pm to 10pm.** *Two or three volunteers.* [Uranian Opposition](#). Devices for Uranian viewing; information about Voyager mission. Low to moderate difficulty.

***Friday 3 November, 5:30pm to 8:30pm.** *Two to four volunteers.* [Natural Sky Conference](#). Networking with exhibiting “powers-that-be”, explaining the importance of eradicating the area’s light pollution. Low 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.

SPECIAL ALERT: DAYLIGHT TIME DISCUSSION

There is a conversation right now in the Louisiana State Legislature to eradicate the back-and-forth of Daylight to Standard. There are two options if the twice-yearly switch is ended: to remain on Standard time year-round, or to remain on Daylight time year-round.



GLOBE at Night: 1 to 10 October [Pegasus]

Instructions to participate in this project are at...
<http://www.brastro.org/phpBB3/viewtopic.php?f=29&t=2760>



12th Annual Spooky Spectrum **Saturday 20 October from 6pm to 10pm** **No admission fee. For all ages.**

Come visit on this moonlit night—if you dare—as HRPO delves into the eerie side of astronomy, physics and aeronautics *for the twelfth consecutive year*. We'll have creepy science demonstrations, some of which we've never used. And don't forget the stories. Strange sky phenomena...extra dimensions... extraterrestrials. Be warned—we want to make you think!



Natural Sky Conference **Friday 2 November from 5:30pm to 8:30pm** **No admission fee. For ages fourteen and older.**



Although open to the general public the Conference will be aimed at those individuals and organizations in town that have a direct ability to quell the light pollution in the area. HRPO anticipates having the Conference at least through the end of twilight, so participants can see damage currently being caused by the light pollution in the area. The theme of the Conference will be the invitees answering questions (seen beforehand) asking them what they will be actively doing within the next twelve months to lessen the light pollution in the area.





Observing Notes:

by John Nagle

Norma – The Rule

Position: RA 16 03, Dec. -52 00°

Named Stars

There are no named stars in this constellation.

Deep Sky:

NGC 6087, C 87, Mel 141, Cr 300, vdB-Ha 188, the S Normae Cluster, mag. 5.4, 16 18.9 -57 54, 12' in size, is an open cluster of 40+ stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 7.9; bright, large. Located 3.8° south-southeast of **NGC 6067**.

NGC 6067, C 89, Mel 140, Cr 298, vdB-Ha 186, mag. 5.6, 16 13 11 -54 13 06, 12' in size, is an open cluster of 100+ stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 8.3; very bright and very large. Located 25' north of **Kappa Normae** or 4.2° south-southwest of **Gamma Normae**.

NGC 6169, Cr 306, Mu Normae Cluster, mag. 6.6 photo, 16 34 04 -44 02 42, 12' in size, is an open cluster of 40 stars; detached, no concentration of stars; small brightness range.

NGC 6167, Cr 305, vdB-Ha 192, Bennett 79a, Harvard 11, mag. 6.7, 16 34 34 -49 46 18, 8'x8' in size, is a bright open cluster of 200+ stars; detached, weak concentration of stars; large range in brightness; magnitude of brightest star (**HD14919**) is 7.4; large and moderately rich. Located 2.4° north-northeast of **Gamma Normae**.

Cr 299, Harvard 10, mag. 6.9 photo, 16 18 48 -54 56 00, 25' in size, is an open cluster of 30 stars; detached, no concentration of stars; moderate range in brightness; poor cluster.

NGC 6134, Cr 303, Mel 146, vdB-Ha 191, Bennett 76, mag. 7.2, 16 27 46 -49 46 00, is an open cluster of 120+ stars; detached, weak concentration of stars; large range in brightness; magnitude of brightest star is 9.3; quite large.

Cr 292, mag. 7.9 photo, 15 50.7 -57 40, 15' in size, is an open cluster of 50 stars; detached, no concentration of stars; moderate range in brightness.

Ru 114, mag. 8.0, 16 06 18 -56 52 00, 14' in size, is an open cluster.

NGC 6152, Cr 304, mag. 8.1, 16 32 45 -52 38 36, 25' in size, is an open cluster of 70 stars; detached, weak concentration of stars; moderate range in brightness; magnitude of brightest star is about 11.0 photo; large.

NGC 5925, Cr 291, vdB-Ha 172, mag. 8.4 photo, 15 27.7 -54 31, 20' in size, is an open cluster of 120 stars; detached, no concentration of stars; small range in brightness; very large.

NGC 5946, IC 4550, Mel 135, vdB-Ha 175, mag. 8.4, 15 35 30 -50 40 08, 7.1' in size, is a globular cluster with a low concentration of stars; quite bright, pretty large, round, and very well resolved.

NGC 6031, CR 297, vdB-Ha 183, mag. 8.5, 16 07 36 54 01 00, 3' in size, is an open cluster of 120+ stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 10.9. Located 50' west of **NGC 6067**.

Ru 119, mag. 8.8, 16 28.3 -51 31, 8' in size, is an open cluster.

NGC 5999, Cr 293, Mel 137, vdB-Ha 178, Bennett 71, mag. 9.0, 15 52 06 -56 28 24, is an open

cluster of 100+ stars. Located 2° northwest of **Iota Normae**.

Cr 307, mag. 9.2, 16 35 20 -51 00 00, is an open cluster of 20 stars.

Of interest beyond magnitude 10:

Abell 3627, **Norma Cluster of Galaxies**, mag. 12.4, 16 15.5 -60 54, redshift of 0.016.

Sp 1, **Sa 2-127**, **PK 329+02.1**, **the Fine Ring Nebula**, mag. 12.6, 15 47 14 -51 31 28, is a planetary nebula with a magnitude 14.03 white dwarf star in its center.

Mz 3, **PK 331-01.1**, **the Ant Nebula**, mag. 13.8, 16 18 40 -52 02 00, 0.4'x0.4' in size, is a planetary nebula.

NGC 6164, **Ced 135a**, **PK 336-01.1**, **Gum 52**, **RCW 107**, 16 33 41 -48 04 48, 1.0'x0.3' in size, is an emission nebula paired with **NGC 6165**.

NGC 6165, 16 34 02 -48 09 06, 2.5'x0.5' in size, is an emission nebula paired with **NGC 6164**, with each nebula forming a lobe. The star **HD 148937** (mag. 6.8) is in the center of the two lobes, with **HD 148988** (mag. 9.0) located 3' to the northeast. **NGC 6164** is the northwest lobe, and **NGC 6165** is the southeast lobe.

Other objects beyond magnitude 10:

2 NGC; 26 He planetary nebulae's; 6 Ru; 6 Sa; 6 SDC; 7 Ly; 4 Pe; 3 ESO; 2 PK; 3 Wray; 2 Pi; 2 Mz; 2 vdB-Ha; 2 Gum; 2 SL; 2 Teu; 3 Slo; 4 RCW; 2 Harvard; 2 Rss; 1 Moffat; 1 Alessi; 1 Johansson; 1 Cannon; 1 Tr; 1 Hogg; 1 MmWe; 1 KoRe; 1 Longmore; and 1 Kro.

Other Stars:

HD 148937, mag. 6.71, 16 33 52.39 -48 06 40.5, is a spectroscopic binary; misclassified as a planetary nebula.

HD 142415, mag. 7.34, 15 57 40.79 -60 12 00.9, is a yellow main sequence star with a **Jupiter** mass (1.62 times) planet in orbit with a period of 386.3 days.

HD 148156, mag. 7.71, 16 28 17.28 -46 19 03.4, is a yellow main sequence star with a gas giant planet of at least 85% of **Jupiter's** mass, in a 1,027 day orbit.

IM Normae, mag. 8.5, 15 39 26.46 -52 19 18.0, is a recurrent nova and an eclipsing binary star.

HD 143361, mag. 9.16, 16 01 50.35 -44 26 04.3, is a binary, yellow main sequence star with a red companion about 30.9 a.u. away. A planet, with at least 3.12 times the mass of **Jupiter**, orbits the primary star in a period of 1,057 days.

HD 330075, mag. 9.36, 15 49 37.69 -49 57 48.7, is a yellow dwarf star with a hot **Jupiter** planet (mass of 0.76 **Jupiter**) in an orbit of 3.369 days.

Stars beyond magnitude 10 of interest:

HD 330038, mag. 11.28, 15 51 15.93 -48 44 58.4, is an emission-line star misclassified as a planetary nebula.

XTE J1550-564, mag. 16.6, 15 50 58.78 -56 28 35.0, is an X-ray binary star composed of a black hole around a 10x mass of the **Sun** cool orange donor star. The black hole is a micro-quasar.

He 2-147, mag. 16.9, 16 14 01.10 -56 59 28.0, is a **Mira** variable star misclassified as a planetary nebula.

1E 161348-5055, 16 17.5 -51 02, is an unusual neutron star found in the center of **RCW 103** supernova remnant. A periodic X-ray source with a period of 6.67 hours, it is approximately 2000 years old. It is unusual in that it is spinning much too slow for its young age, behaving instead like a multi-million year old star.

SGR J1550-5418, 15 50 54.11 -54 18 23.7, is a soft gamma repeater (**SGR**) – a magnetar star that is emitting gamma-ray flares. The rotational period, of approximately 2.07 seconds, is the fastest yet observed for a magnetar star.

4U 1538-52, **QV Normae**, 15 42 23.36 -52 23 09.6, is an X-ray pulsar star.

4U 1608-52, **QX Normae**, 16 12 43.0 -52 25 23, is an X-ray burster star.

4U 1624-490, 16 28 02.83 -49 11 54.6, is a low-mass X-ray binary star.

4U 1630-47, 16 34 01.61 -47 23 34.8, is a low-mass X-ray binary star.



Sky Happenings: October, 2018

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

- Oct. 2nd** - **Last Quarter Moon** occurs at 4:45 AM CDT.
- Oct. 4th** - Early Morning: The waning crescent **Moon** is 1° south of the **Beehive Cluster (M44)** in the predawn sky,
Venus is stationary at 11 PM CDT.
- Oct. 5th** - Early Morning: A thinner **Moon** has slipped down into **Leo** and leads **Regulus** by about 7° in the predawn sky,
Mercury passes 2° north of **Spica** at 1 PM CDT,
Regulus is 1.9° south of the **Moon** at 5 PM CDT,
The **Moon** is at perigee (227,666 miles or 366,392 km from **Earth**) at 5:27 PM CDT.
- Oct. 6th** - The Martian disk drops below 15 arc seconds diameter.
- Oct. 7th** - Dwarf planet **Ceres** is in conjunction with the **Sun** at 5 AM CDT.
- Oct. 8th** - **New Moon** occurs at 10:47 PM CDT.
- Oct. 10th** - The **Moon** passes 13° north of **Venus** at 10 AM CDT.
- Oct. 11th** - The **Moon** passes 4° north of **Jupiter** at 4 PM CDT,
Dusk: The waxing crescent **Moon** is 3° above **Jupiter**, low in the southwest.
- Oct. 14th** - **Mercury** passes 7° north of **Venus** at 10 AM CDT,
Dusk: After sunset, the waxing crescent **Moon** and **Saturn** emerge from the gloaming 2° or less apart in **Sagittarius**. The fading **Jupiter** and fiery **Mars** anchor at either end to complete a graceful celestial arc,
The **Moon** passes 1.8° north of **Saturn** at 10 PM CDT.
- Oct. 16th** - Asteroid **Juno** is stationary at 1 PM CDT,
First Quarter Moon occurs at 1:02 PM CDT.
- Oct. 17th** - The **Moon** is at apogee (251,175 miles or 404,227 km from **Earth**) at 2:16 PM CDT,
Evening: The waxing gibbous **Moon** appears 5° to the right of **Mars**.
- Oct. 18th** - The **Moon** passes 1.9° north of **Mars** at 8 AM CDT,
Evening: A fattening gibbous **Moon** appears 6° to the upper left of **Mars**.
- Oct. 20th** - The **Moon** passes 3° south of **Neptune** at 5 PM CDT.
- Oct. 21st** - The **Orionid Meteor Shower** peaks under a waxing gibbous **Moon**, only providing nearly two hours of dark skies before dawn.
- Oct. 23rd** - **Uranus** is at opposition at 8 PM CDT.
- Oct. 24th** - The **Moon** passes 5° south of **Uranus** at 8 AM CDT,
Full Moon occurs at 11:45 PM CDT.
- Oct. 26th** - **Venus** is in inferior conjunction at 9 AM CDT,
All Night: The **Hyades** cradle the waning gibbous **Moon** until sunrise.
- Oct. 31st** - The **Moon** is 1° south of the **Beehive Cluster (M44)** at 11 AM CDT,
Last Quarter Moon occurs at 11:40 AM CDT,
The **Moon** is at perigee (230,034 miles or 370,204 km from **Earth**) at 3:23 PM CDT,
Night: **Last Quarter Moon** rises in **Cancer**, 4° away from the **Beehive Cluster (M44)**.

Planets:

Mercury – **Mercury** hangs just above the southwest horizon after sunset in the last week of October. On the 27th, the planet will be 3.4° below **Jupiter** (which is 6° high after sunset). **Mercury** shines at magnitude -0.2.

Venus – On October 1st, **Venus** stands very low in the west 30 minutes after sunset, gleaming at magnitude -4.7, with a 47" diameter disk, and a slender crescent phase. **Venus** will disappear from view within a week, with an inferior conjunction (6° 15' from the **Sun**) on October 26th. The planet will emerge into the morning sky early in November.



Mars – Look to the south after darkness falls, and **Mars** meets your gaze. Although the planet reached opposition in late July, it remains dazzling against the background stars of **Capricornus**. **Mars** shines at magnitude -1.3 as October opens, but dims to magnitude -0.6 by month's end, with the apparent diameter shrinking from 16" to 12" during the month. The planet will cross the breath of **Capricornus** during October, starting the month in the southwest corner, appearing nearly 30° high at its peak at around 9 PM local daylight time. By late October, the planet will lie in the northeast corner of **Capricornus**, standing 5° higher when it peaks around 8 PM. Assuming clear martian skies, the following features will be near the center of the planet's gibbous disk on October evenings: *Mare Cimmerium* at the beginning of the month; *Mare Sirenum* taking over at the end of the first week; *Solis Lacus* appears front and center in mid-October; while *Sinus Meridiani* and *Sinus Sabaeus* take center stage during the month's third week; and the planet's two most prominent features – the bright *Hellas Basin* and the dark *Syrtis Major* – appear best in October's final few evenings. The northern hemisphere of **Mars** reaches its winter solstice on October 16th.

Jupiter – **Jupiter** lies 14° to the upper left of **Venus** on October 1st, standing 10° high in the southwest an hour after sunset, shining at magnitude -1.8. The planet will lose about 3° of altitude each week of October. The best conditions for observing comes early in the month, with a disk spanning 33" on the 1st.

Saturn – Early evening views of **Saturn** should be spectacular, as it travels eastward above the **Teapot of Sagittarius**. The planet – at magnitude +0.5 – stands about 25° high in the south as darkness starts to fall in early October, and doesn't set until 11 PM local daylight time. In mid-October, **Saturn's** disk measures 16" across while the rings span 37" and tips 27° to our line of sight. The moon **Titan** will glow at 8th magnitude as it orbits the planet every 15.9 days, passing south of the planet on the 7th and 23rd, and north on the 15th and 31st. A 4-inch telescope brings in 10th magnitude moons **Tethys**, **Dione**, and **Rhea**. Farther still is the moon **Enceladus**, at 12th magnitude, orbiting every 1.4 days – you will need an 8-inch telescope for this moon.

Uranus – **Uranus** reaches opposition on October 23rd, shining at magnitude 5.7 in southwest **Aries**, just over the border from **Pisces**. On the night of opposition, the planet will be 2.8° northeast of 4th magnitude **Omicron Piscium**. Small telescopes will show a distinctive blue-green disk that spans 3.7".

Neptune – **Neptune**, in **Aquarius**, glows at magnitude 7.8, with a disk 2.3" wide. **Neptune** lies between 4th magnitude stars **Lambda** and **Phi Aquarii** in early October. By the 31st, it stands 2.1° east of **Lambda Aquarii**. A telescope will reveal a 2.3" disk and a subtle blue-gray color.

Pluto – On October 15th, **Pluto** will be at RA 19 20.3, Dec. -22 08, and will shine at magnitude 14.3.

Moon – A thin waxing crescent will be some 3° to the upper right of **Jupiter** at dusk on the 11th, and a thicker crescent 2° to the upper right of **Saturn** on the 14th. The waxing gibbous **Moon** is about 6° to either side of **Mars** on the 17th and 18th. The waxing gibbous **Moon** shines in the **Hyades** on October 24th at dawn. Target the **Moon's** northeast quadrant as night falls on the 26th. You will quickly see a pair of nice craters – *Atlas* and *Hercules*. *Hercules* spans 43 miles and shows a dark, lava flooded floor punctuated by a sharp edged crater. *Atlas* measures 54 miles across, lying closer to the **Moon's** limb. This older crater has a wrinkled floor and a jumble of central peaks.

Favorable Librations: **Bunson A Crater** on October 1st; **Mare Australe** on October 12th; **Gum Crater** on October 14th; and **Regnault Crater** on October 26th.

Greatest North Declination on the 30th (+21.3°; **Greatest South Declination** on the 15th (-20.9°)

Libation in Longitude – east limb on the 12th (+6.1°), west limb on the 24th (-4.8°)

Libation in Latitude – north limb on the 25th (+6.6°), south limb on the 10th (-6.5°)



Asteroids – **Vesta**, early in the month, will be 4° southeast of magnitude 2.8 **Lambda Sagittarii** – the star that marks the lid of the **Teapot** asterism. On October 1st, **Vesta** lies 2.1° due west of **Lambda**, and just 4' south of a magnitude 6.5 field star. From October 5th-9th, **Vesta** lies within 1° of **Lambda**, passing 20' of it on the 7th. Continuing eastward, **Vesta** slides within 1° of the magnitude 2.1 **Sigma Sgr** in the **Teapot's** handle from October 21st-24th. The closest approach will be on the 23rd, when 40' separate the two. During October's first days, 7th magnitude **M 28** and 9th magnitude **NGC 6631** will lie within 1° of **Vesta**, and 5th magnitude **M 22** lies 2° north of the asteroid during the second week of October. *My estimates* of **Vesta's** location are as follows: On October 4th – about 1° south of **M 28**; on the 9th – about 0.3° south of **NGC 6638**; on the 11th – about 1½° south of **M 22**; on the 18th – about 1° north of **Phi Sgr**; on the 22nd – about ½° north of **Sigma Sgr**; and on the 28th – about 2° north of **Tau Sgr**.

Comets – During the first half of October, comet **21P/Giacobini-Zinner** will be in the morning sky while the **Draconid** meteor shower reaches its peak. The comet should glow at 8th magnitude in early October. It is expected to sport a nice gas trail of about 1° long. *My estimates* of the comet’s location are as follows: On October 1st – about 6° east of **Delta Mon**; on the 7th – less than ½° north of **M 50** in **Monoceros**; on the 10th – about 4° west-northwest of **Theta CMA**; on the 14th – about 3° to 4° north-northwest of **Gamma CMA**; and on the 16th – about 8° to 9° west of **Alpha CMA (Sirius)**.

Comet **38P/Stephan-Oterma** is predicted to shine, in the first week of October, at magnitude 10.5 at about 5° north of **Alpha Orionis (Betelgeuse)**. The comet then passes south of **Orion**’s club, spending several mornings a bit more than 1° from **Xi Orionis**. Then it zips across **Gemini**. *My estimates* of the comet’s location are as follows: On October 4th – about 4° north of **Mu Ori**; on the 6th – about 2° to 3° south of **Nu Ori**; on the 8th – about 1° to 2° south of **Xi Ori**; on the 21st – about 3° to 4° north of **Xi Gem**; and on the 29th – about 4° south of **Zeta Gem**.

Meteor Showers – The **Orionids**, from October 2nd to November 7th, peak on October 21st under a waxing gibbous **Moon** that will set around 4 AM local daylight time. In the two hours or so of darkness, until twilight begins, observers could see up to 20 meteors-per-hour. But, the **Draconids** could give the **Orionids** a run for the money. This typically minor shower might erupt on the night of October 8th/9th as **Earth** passes through the debris trail of the parent comet (**21P/Giacobini-Zimmer**). Previous outbursts have followed the comet’s return (it passed closest to the **Sun** in September). Viewers could see 10 or more meteors-per-hour in the hours before midnight.

When to View the Planets:

Evening Sky

- Mercury (southwest)
- Venus (southwest)
- Mars (south)
- Jupiter (southwest)
- Saturn (southwest)
- Uranus (east)
- Neptune (southeast)

Midnight

- Mars (southwest)
- Uranus (southeast)
- Neptune (southwest)

Morning Sky

- Uranus (west)



DARK SKY VIEWING · ON OCTOBER 6TH, SECONDARY ON OCTOBER 13TH

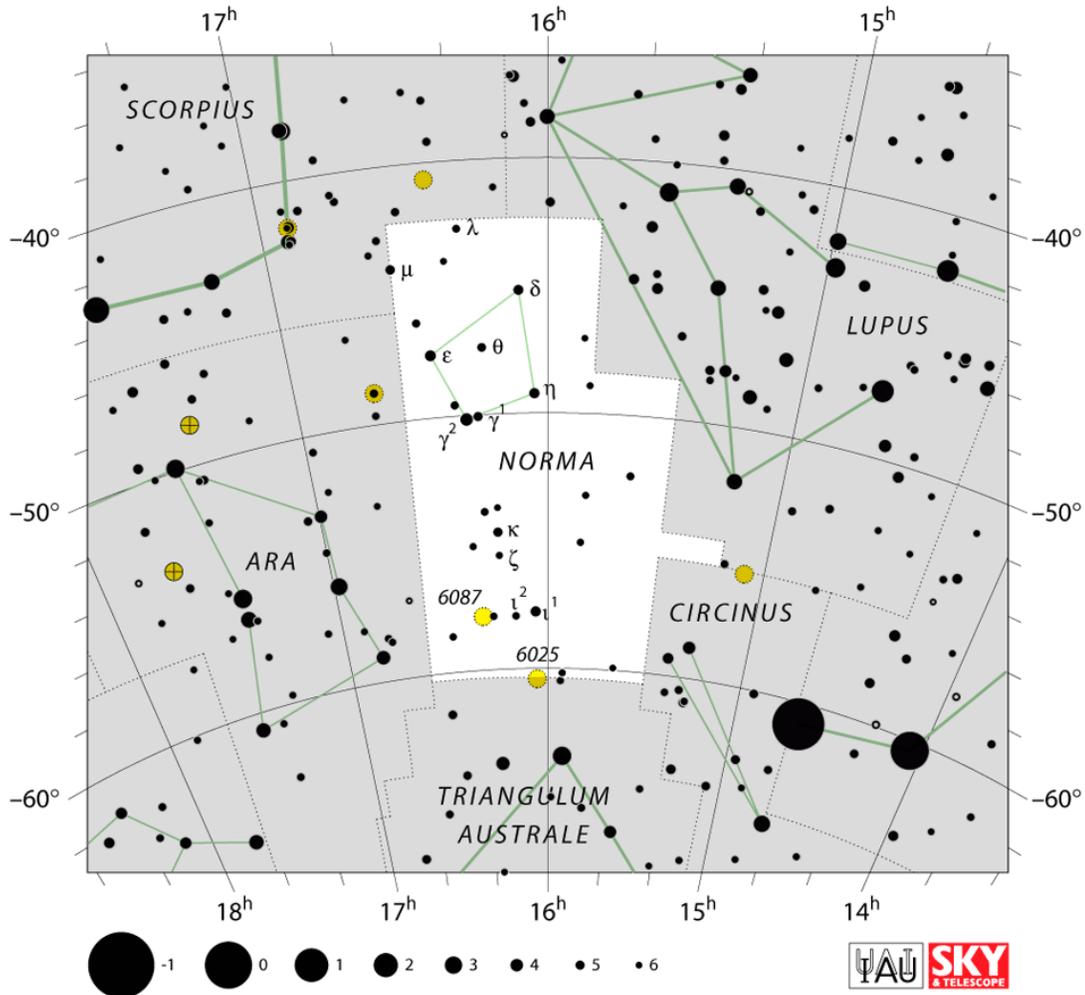


Mythology:

Norma – The Level (or The Rule)

Norma is one of the constellations introduced by the French astronomer Nicolas Louis de Lacaille following his mapping of the southern skies in 1751-1752. The constellation was often called *Norma et Regula* on old maps, for it represents a draughtsman’s set-square and rule, placed next to the Compasses (Circinus), and a Builder’s Level (Triangulum Australe).

The brightest stars of Norma are only 4th magnitude and none have names. Because of changes in the constellations boundaries since Lacaille’s time, Norma now has no stars labeled Alpha and Beta (the star that Lacaille designated Alpha Normae is now part of Scorpius). Incidentally, Norma shares the distinction with Puppis and Vela, both of which lack stars labeled Alpha and Beta because they were once part of a much larger constellation, Argo Navis. When Argo Navis was split into three by Lacaille, the stars Alpha and Beta ended up in the third subdivision, Carina.



The End