

**Monthly Meeting October 12<sup>th</sup> at 7:00 PM, in person, masked!**  
(Monthly meetings this September, October and November are on 2<sup>nd</sup> Tuesdays at Highland Road Park Observatory)  
You can also join this meeting via [meet.jit.si/BRASMeet](https://meet.jit.si/BRASMeet)

**PRESENTATION: Amy Northrop, NASA Solar System Ambassador, will talk about the Lucy spacecraft project. (see [Page 10](#)).**

## *What's In This Issue?*



*President's Message*  
*Business Meeting Minutes*  
*Member Meeting Minutes*  
*Outreach Report*  
*Asteroid and Comet News*  
*ALCON 2022*  
*Light Pollution Committee*  
*Globe At Night*  
*BRAS Calendar*  
*Article: Lucy Spacecraft*  
*HRPO EVENTS*



***OBSERVING NOTES - Lacerta – The Lizard***

***Like this newsletter? See PAST ISSUES online back to 2009***  
***Visit us on Facebook – Baton Rouge Astronomical Society***

***BRAS YouTube Channel***

## President's Message

And here we are rolling right into the heart of Fall, October. We've already had some of those distinctly crisp Autumn nights and the sun is finally setting at an increasingly reasonable time. We even had enough of a break in the rain to schedule an **excursion to the Dark Sky site** for a few of our members—a feat which we hope to repeat more often as the rainy summer cycle gives way to some prime observing weather.

With fall clicking right along, we've got a slew of new opportunities for outreach coming up over the next few weeks and months, so do pay attention to the listings from Ben below—of particular note is the set of outreaches available to us on the 23<sup>rd</sup> with no fewer than three different venues asking for us to show up over the course of the day: all of these are events we've done before and had a great time doing, so let Ben know if you can make any (or more than just one) of the events listed. In addition to what Ben has put together for us, there are also plenty of opportunities to help out with events at the observatory this month, just contact Chris K to see how. One more opportunity not on the list is the **International Observe the Moon night on the 16<sup>th</sup>**. I'll be trying to set up a sidewalk astronomy event for either the 15<sup>th</sup> or 17<sup>th</sup> for somewhere in Baton Rouge, but don't feel limited by trying to join me: set up your own outreach—there are even some great tips on how to do this (and an award to earn!) from the Astronomical League if you're interested. If you want to join me, just fire me off an email and I'll send you the details. I think the more of us sign up, the better time we'll have.

Now that October is upon us, it's time to start thinking about next year, too. Sometime this month, **Trey will be sending out dues-renewal information, as well as the opportunity to buy next year's Astronomy calendar**. If you don't feel like submitting online, feel free to drop by the monthly meetings and doing it all in person. Also, just as a reminder, **we'll be electing new officers in December**, so if you've got a willingness to serve as one of the club officers, let us know ASAP: it really is just as glamorous as it seems.

A bit further down the line, we're expecting to host the Astronomical League for our 2023 convention and plans are already in the works. Check the info listed below if you want to be a part of the team.

We're still working on hammering out plans for other club events. Ben has a small hoard of **Night Sky Network kits** for us to learn how to use in our outreach efforts once all the school fairs come back into fashion. To help us, we're setting up some training sessions, which can be a great way to get to know your fellow club members and maybe even learn something you're just a bit fuzzy on.

We did, however, finally nail down a date for the next **Members Observing Night: Friday, 26 November**. We realize a lot of people will still be pretty full of turkey by then, but with DST finally over for the moment, we can start observing earlier in the evening and run until the tryptophan finally catches up with us. The 200GS is functional, so if we can find an operator, we may even have that up and running for the interested parties.

Shortly after, we'll be celebrating **BRAS's 40<sup>th</sup> anniversary** as an institution in Baton Rouge, so look forward to that, too. John is hammering out the details on the fun, but we do know it'll come in two forms: a private party to coincide with our end of the year potluck and a public party where we're inviting everyone to come celebrate with us. I suspect that for the latter we'll have the full party atmosphere, with food trucks and observing for the public, too, so we'll want help from everybody to make sure our guests have a good time. And, of course, there will be cake.

And that's it: give a careful read to what's below and see what grabs your interest.

Scott Cadwallader, President 2021



***BRAS wishes all of you a safe and Happy Halloween***

## **MONTHLY MEETING MINUTES – SEPTEMBER 14th**

**in person at HRPO, live-streamed on YouTube, and remotely via Jitsi**

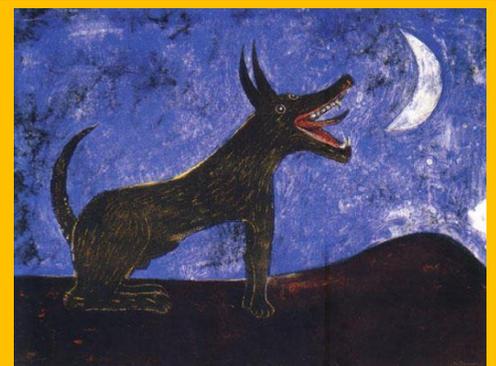
- Steven Tilley was the speaker, and he talked about the ALCon he attended, where Dr. Jocelyn Bell Burnell was the keynote speaker, and her talk was “The Discovery of Pulsars in Context”.

The following topics were discussed:

- Talking to LSU about their plans for the spring semester. They are currently using HRPO on Monday and Wednesday nights. General meetings are moved to the 2<sup>nd</sup> Tuesday of the month for October and November. LPC meetings will be one hour before general meeting.
- Member education – How to use the loaner telescopes – maybe on MOON nights
- MOON night in October, or maybe on the 12<sup>th</sup> of November. Winter MOON night in Jan. or Feb.
- Equipment sales – eyepieces, 10” Dob, 16”, 8”.
- 40<sup>th</sup> Anniversary Party
- October Outreaches
- Membership Drive
- Observatory:
- Sunspots!
- Spooky Spectrum on October 16<sup>th</sup>, 6 – 10 PM.
- 5<sup>th</sup> Natural Sky Conference in November
- Moon Eclipse on the evening of November 18/19
- Comet Leonard
- Coy might be leaving Baton Rouge



Minutes submitted by Thomas Halligan, Secretary, typed up by John Nagle



*Happy  
Howl-O-Ween!*

### **2021 Officers:**

**President:** Scott Cadwallader  
president@brastro.org

**VP:**  
vicepresident@brastro.org

**Secretary:** Thomas Halligan  
secretary@brastro.org

**Treasurer:** Trey Anding  
treasurer@brastro.org

**BRAS Liaison for BREC:**  
Chris Kersey

**BRAS Liaison for LSU:**  
Greg Guzik

### **Committees/Coordinators:**

AL Awards  
Merrill Hess  
Lightpollution@brastro.org  
John Nagle  
Newsletter@brastro.org  
Michele Fry  
Observing@brastro.org  
John Nagle  
Outreach@brastro.org  
Ben Toman

## **Business Meeting Minutes –September 29th, 2021** **remotely via Jitsi thru November** (meeting is the last Wednesday of the month)

The following items were discussed:

1. Trey – will send out invoices for next year’s dues this month. We still get a discount for the calendars from Astronomy Magazine.
2. Scott – January meeting program – Merrill on it. Will need to line up speakers for the rest of the year (2022).
3. Election of Officers: Chris K – perhaps an informal note with name and how long one has been a member of BRAS. Scott C – Having a greeter is a good idea. Steven T – Note suggestion should be optional. **NOTE:** By-laws require a slate to be published in the November newsletter. Any suggestions for next year’s officers would be welcome.
4. Member education sessions: Scott C – There is one request for BRAS to have a “Learn Your Sky” course. New Member kits are related to this.
5. MOON Night – Chris K – Need to check about free Fridays at HRPO. Thanksgiving Friday and Halloween Friday are open. Scott C – Temp schedule it for Thanksgiving Friday.
6. Equipment sales – Scott C – We could assign someone for this task.
7. Zazzle Store – Trey shared an image from Zazzle as a possible design for a BRAS magnet for cars. Scott C – Lets have it added to our Zazzle account (the magnet as it is currently designed). We can tell people they are there, and to submit orders.
8. Imaging Policy – Chris K – A policy is needed for patrons of HRPO to put their cell phones on the eyepieces of telescopes to take pictures. Various ideas were discussed. Scott C wants to see a rough draft of a policy in writing.
9. BRAS 40<sup>th</sup> Anniversary Party – Will be held on Friday, December 17<sup>th</sup>, in conjunction with the HRPO Preview Party. Chris K – BREC has a lot of licensed vendors for food and drink. HRPO will have enough people there to warrant food and drink.
10. LPC Meetings have been moved to be held at 6:00PM CDT before the General Meetings – changed to the 2<sup>nd</sup> Tuesday of the month for October and November.  
BREC (Mr. Hughes) has been told about BRAS wanting to get HRPO designated by the IDA as an Urban dark Sky Place. Mr. Hughes has told Brandon Smith (Assistant Superintendent of BREC) about it. Awaiting a possible meeting to discuss it.
11. Observatory – Scott C – What are things we think BREC should do to prepare for ALCon 2023. Chris K – HRPO will be getting a Generac generator next year.
12. Outreach – October 23<sup>rd</sup> will be a busy day. The Boy Scouts, at Lamar-Dixon have priority due they were the first to ask. It is also the day of the Maker Faire at the Goodwood Library (10 AM to 2 PM). There is also a Maker’s market this month.
13. HRPO Keys – Chris K – BRAS to get another set of keys for HRPO. Scott C – I will take one set of keys. No decision on who else would get a set. Whoever does will have to want to take on the responsibility for them. Scott C will talk to people about it.
14. Observe The Moon Night – Scott C will make an announcement in the newsletter – it will be held either on the levee (downtown) or on the LSU Campus.

Meeting ended at 8:28 PM, with 6 attendees.



Minutes submitted by Thomas Halligan, Secretary, typed up by John Nagle



## BRAS Outreach Report

Hi Everyone,

Well, we did it again...and I did it again. We had a fantastic last-minute outreach at the Makers Market...and I forgot to take any pictures! In my defense, it's hard to remember to stop and snap pictures when there is no down time. Person after person at the eyepieces to see the Moon, Jupiter, Saturn and Venus. Thanks to Scott C. for 1.) remembering that the Makers Market was happening that Saturday night (and it was late Friday night when it got remembered!) and 2.) for coming to help out after he had already done two long nights of imaging at the dark sky site.

That one kind of snuck up on us in the wake of the storm recovery and all. They love having us out there, though! Which brings me to the next thing...

We have 3 outreach requests in October. Unfortunately, all 3 are for the same date. Priority will be given to the Boy Scout campout at Lamar Dixon center in Gonzales. Not only were they the first to reach out, but our own club member, Rob, is one of those in charge of it and we always like to go help out there regardless of his ability to attract cloud cover, haha!

The other 2 events are the Baton Rouge Mini Maker Faire and the Mid City Makers Market. The Mini Maker Faire is doing a hybrid event this year with portions online over a few days and then an onsite event. Of course, the Makers Market will be the same as it is every month.

I won't rule out doing all 3 events, but we will need a lot of volunteers to pull that off. The hours for the Mini Maker Faire are much shorter this year so that helps a lot. Take a look at these events and please let me know ASAP if you will help out. You can do more than one!!

**Saturday, October 23rd** (All 3 events are on the same day)

### **Boy Scout Campout**

Lamar-Dixon Center Gonzales

Evening Sky Viewing (optional solar viewing/demos earlier in the day)

At least 2-3 volunteers needed. As noted above, if we would like to show up earlier, we are welcome to do solar observing or some other of our demo kits we use. This will depend on our volunteer availability.

### **Mini Maker Faire**

Goodwood Library

10am-2pm

At least 2 people to staff our exhibit at all times. You can volunteer for shorter shifts. That means we could get by with 4 volunteers (2 for the first 2 hours, 2 more for the last 2 hours) or any number more than that.

### **Mid City Makers Market**

Circa 1857 Government St.

6pm-9pm

At least 2 volunteers preferred for evening sky viewing



As I said, this will be a challenge. I have not yet submitted an application to the Mini Maker Faire since their request came in last and I wasn't sure if we'd be able to get enough volunteers. Again, we need to prioritize the Boy Scout campout. Any volunteers we get after that (or people willing to do double duty on that day) and we'll try to staff the other two events. Because of this rare situation, I really do need some responses ASAP to get an idea of how many of these events we'll be able to handle. Let me know!

Clear Skies, Ben Toman



## **2023 Astronomical League Convention in Baton Rouge!**

**NOTICE:** At ALCON Virtual 2021, it was announced that the Baton Rouge Astronomical Society has been selected to host the 2023 Astronomical League Convention (ALCon 2023); This conference will include lectures, panel discussions, workshops, an exhibition, and astronomy field trips. It will be Wednesday July 26 through Saturday July 29. This event could bring from 250 to 500 people to Baton Rouge. This is an opportunity to bring speakers we always wish for to Baton Rouge.

**Subcommittees:** We are breaking up the work in small bites so no one will have too much work and one may work with a subcommittee without having to be at the full ALCon 2023 committee meetings.

- Venue & Housing
- Finance
- Publicity/Communications/Photography (this subcommittee will do a lot of work needs volunteers)
- Reports
- Scheduling

**Next Full committee meeting: October 16<sup>th</sup>, 1 PM**

- ALCon 2023 Committee Meeting (“Astronomical Gumbo”)
- Saturday, October 16, 2021, 1:00 PM
- Coffee Call, 3132 College Dr F, Baton Rouge, LA 70808

If you would like to attend this meeting, and/or help by working on a subcommittee please send an email to Steven Tilley at [steveareno225@gmail.com](mailto:steveareno225@gmail.com).



# ALCON 2022

July 28 – 30

## EMBASSY SUITES HOTEL

1000 Woodward Pl. NE

Albuquerque, New Mexico 87102

<https://alcon2022.astroleague.org/>

(Website available by January 14, 2022)



Hosted by:

**The Albuquerque Astronomical Society**

[www.TAAS.org](http://www.TAAS.org)



# BRAS Light Pollution Committee Report

This committee meets at 6:00, same day as the 7:00 BRAS Business Meeting (NEW SCHEDULE: Meetings will be the last Wednesday of the month.)

Everyone is welcome to join in..

**NOTICE: The LPC Meetings for October and November will be held at 6:00 PM on the day of the General Meeting - on October 12<sup>th</sup> and on November 9<sup>th</sup>.**

*John R. Nagle*

\*\*\*\*\*

## Globe At Night

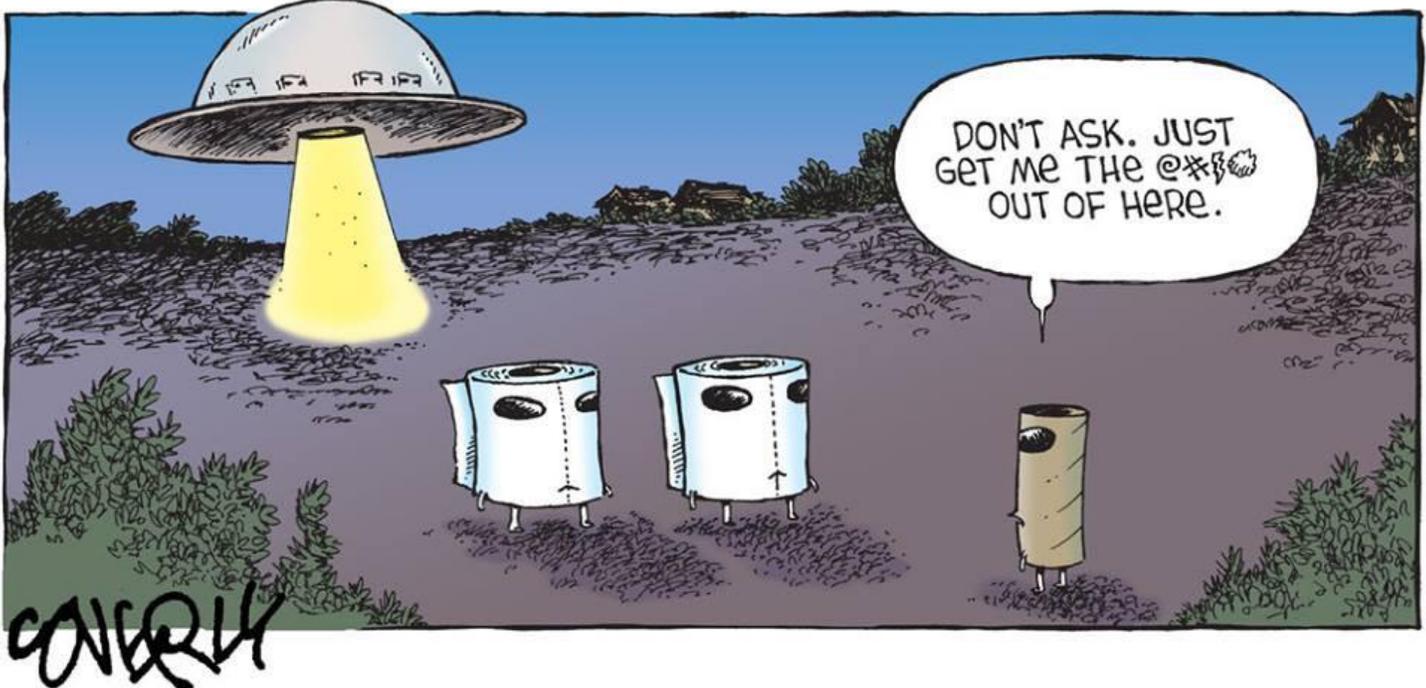
The target for the Globe at Night program is Pegasus from September 27<sup>th</sup> through October 6<sup>th</sup>, and Perseus from October 27<sup>th</sup> through November 5<sup>th</sup>.

If you would like to participate in this citizen science program, you can find instructions at

**<https://www.globeatnight.org>**

P.S. The "Loss of the Night" app can be used for information and for reporting your observations.

\*\*\*\*\*



# Upcoming BRAS Meetings:

## Monthly Member Meeting –

7 pm Tuesday, October 12<sup>th</sup> at the Observatory, and via YouTube & Jitsi.  
moved to 2<sup>nd</sup> Tuesdays for September, October and November only

## Light Pollution Committee:

6 pm Tuesday, October 12<sup>th</sup>, via Jitsi. (Open to the public), followed by . . .

## Monthly Business Meeting:

7 pm Tuesday, October 27<sup>h</sup>, via Jitsi (Members Only)

## MOON (Members Only Observing Night)

Friday, November 26<sup>th</sup>, Time TBA

## ALCon 2023 (“Astronomical Gumbo”) Committee Meeting

1 p.m. Saturday, October 16, 1:00 PM, Coffee Call, 3132 College Dr F, Baton Rouge, LA 70808



\*\*\*\*\*

***ARTICLE: NASA's Lucy Spacecraft is slated to launch in October, and will be the first space mission to study the swarms of Trojan asteroids associated with Jupiter. Our speaker this month, Amy Northrup, will give details.***

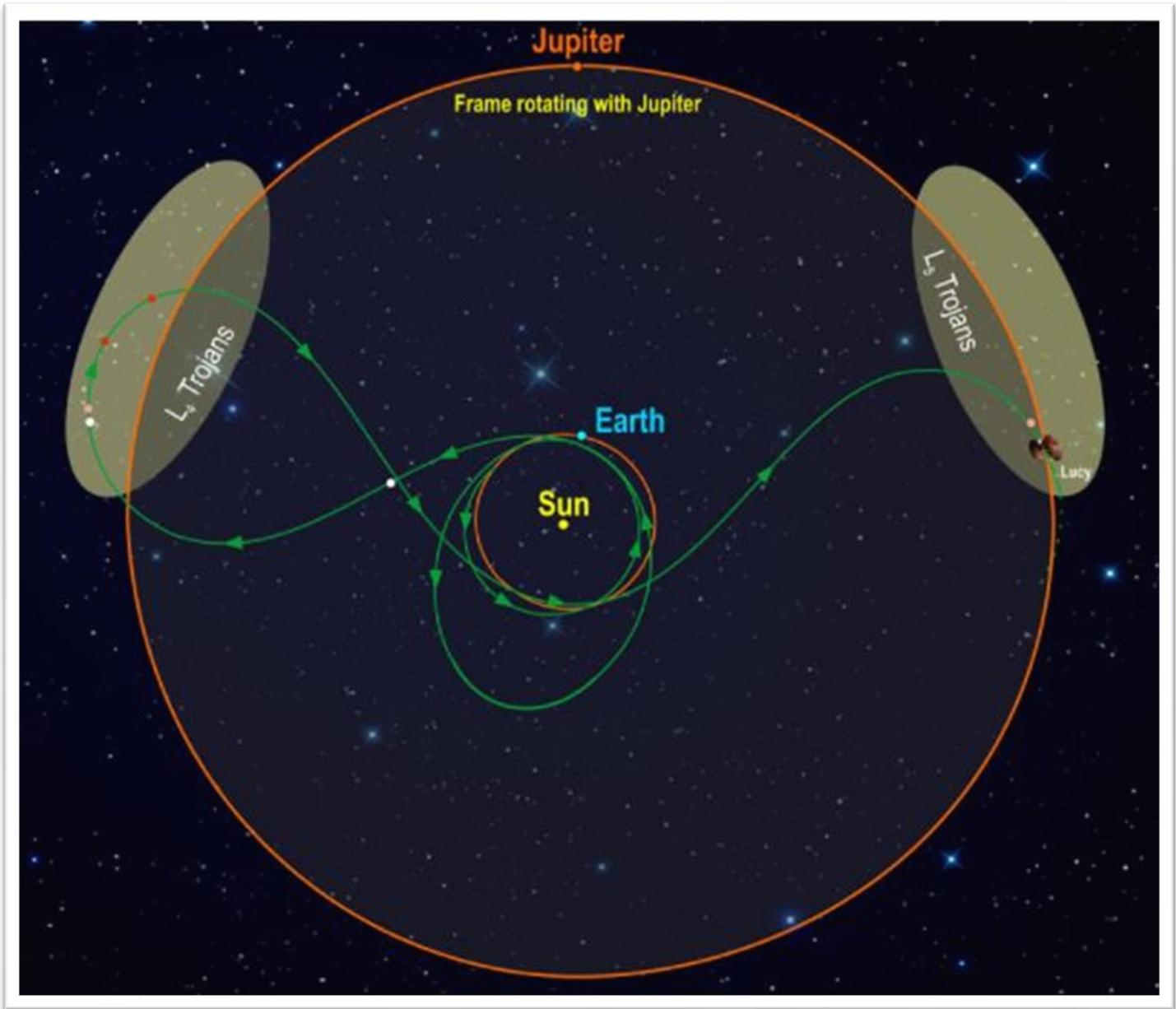


Image credit: [Southwest Research Institute](#)

\*\*\*\*\*

# Flying “Rocks” and “Dirty Snowballs”:

## Asteroid and Comet News

**October 2021**  
**Volume 3, Issue 8.**

[JPL Close Approach Data](#) from Aug-14-2021, to, 2021-Sep-17 Distance Nominal < 1 Lunar Distance

Object	Close-Approach (CA) Date	CA Distance Nominal (LD)	H (mag)	Diameter
(2021 PA17)	2021-Aug-14	0.17	27.8	7.3 m - 16 m
(2021 QD1)	2021-Aug-27	0.8	28.7	4.8 m - 11 m
(2021 QV3)	2021-Aug-28	0.33	30.2	2.4 m - 5.3 m
(2021 RN5)	2021-Sep-02	0.98	27.6	8.2 m - 18 m
(2021 RT4)	2021-Sep-06	0.69	28.1	6.2 m - 14 m
(2021 RS2)	2021-Sep-08	0.06	30.3	2.3 m - 5.1 m
(2021 RP2)	2021-Sep-08	0.31	30.2	2.4 m - 5.3 m
(2021 RS5)	2021-Sep-08	0.36	28.3	5.7 m - 13 m
(2021 RQ2)	2021-Sep-09	0.49	29.5	3.3 m - 7.4 m
(2021 RB6)	2021-Sep-09	0.67	28	6.8 m - 15 m
(2021 RG6)	2021-Sep-11	0.22	28.9	4.4 m - 9.9 m
(2021 RG12)	2021-Sep-11	0.84	29.2	3.9 m - 8.6 m
(2021 RR5)	2021-Sep-12	0.2	28.5	5.3 m - 12 m
(2021 RF16)	2021-Sep-16	0.83	29	4.3 m - 9.6 m
(2021 SG)	2021-Sep-16	0.64	24	42 m - 94 m
(2021 SP)	2021-Sep-17	0.04	29.3	3.7 m - 8.3 m

As of 2021-09-23 there is

1,264 objects listed on JPL’s Sentry: Earth Impact Monitoring(JPL) (<https://cneos.jpl.nasa.gov/sentry/>)  
 2,835 objects have been removed from Sentry(JPL) (<https://cneos.jpl.nasa.gov/sentry/removed.html>)

For more information read Jon Giorgini's "Understanding Risk Pages" (<http://www.hohmanntransfer.com/by/giorgjon.htm>) (i.e. “A risk-page listing is not a *prediction* of impact”)

16 objects were removed from NASA JPL’s Sentry: Earth Impact Monitoring list from 2021-08-19 to 2021-09-22 see <https://cneos.jpl.nasa.gov/sentry/removed.html>

Useful Links:

- Guide to Minor Body Astrometry (<https://www.minorplanetcenter.net/iau/info/Astrometry.html>)
- How Are Minor Planets Named? (<https://www.minorplanetcenter.net/iau/info/HowNamed.html>)
- New- And Old-Style Minor Planet Designations (<https://www.minorplanetcenter.net/iau/info/OldDesDoc.html>)

The Tracking News  
<http://www.hohmanntransfer.com/news.htm>

Accessible NEAs  
<https://cneos.jpl.nasa.gov/nhats/intro.html>

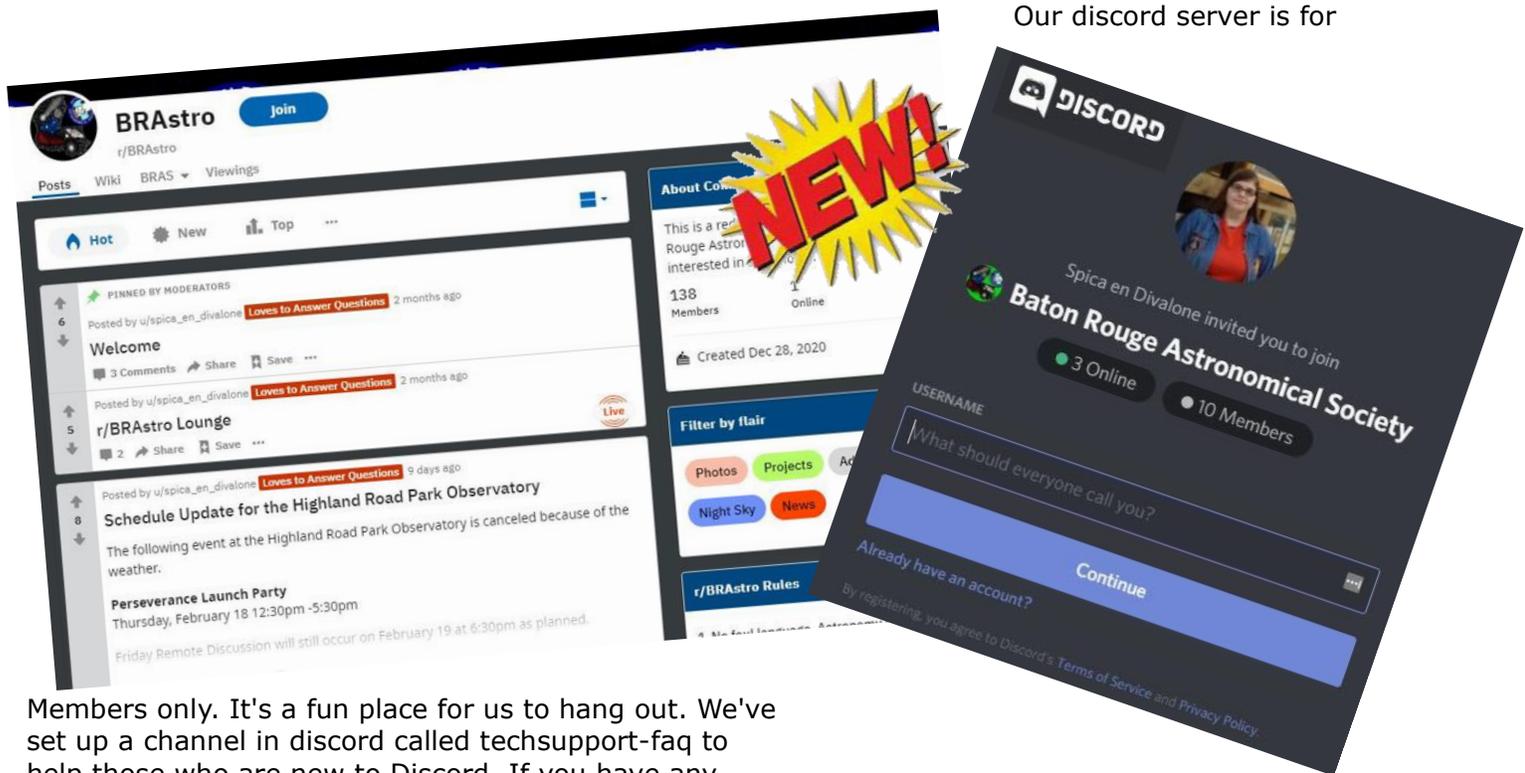
\*\*\*\*\*

## BRAS subreddit and a Discord server.

**From Amy Northrup:** Our subreddit has been set up for us to reach out to the public. I'd love for you to join us on there.

**<https://www.reddit.com/r/BRAstro/>**

If BRAS members want to identify themselves as club members, PM me to add a Flair next to your username.



Our discord server is for

Members only. It's a fun place for us to hang out. We've set up a channel in discord called techsupport-faq to help those who are new to Discord. If you have any problems you can message me or Justin. **<https://discord.gg/6N8r8DDj>** It also has voice channels so that you can speak to people through Discord. Discord requires the download of a free app.

The best part about both of these is that you can access them on your phone with the free apps. Hope to see you there.

***To join the discord, please email [safey2007@gmail.com](mailto:safey2007@gmail.com) with the subject **BRAS Discord**.***

*Sincerely,  
Amy & Justin Northrop*



# Messages from HRPO

*Highland Road Park Observatory*



## FRIDAY NIGHT LECTURE SERIES

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

8 October: “Wonders of the Fall Sky” BREC Education Program Specialist Amy Northrop 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!

22 October: “The Spooky Sampler” We’re getting close to Halloween...this lecture slot will be used to highlight a smorgasbord of unsettling stories, images and theories—for our adult audience.



## SCIENCE ACADEMY

*Saturdays from 10am to 12pm*

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

9 October = “Fall Day” This stand-alone session allows Cadets to dive into demos and experiments not usually used for SA. Certain constellations and years are covered, and there is construction on an electronic circuit board!

30 October = “Spooky Sampler” We’re getting close to Halloween... this lecture slot will be used to highlight a smorgasbord of unsettling stories, images and theories—for our adult audience.



## SOLAR VIEWING

*Saturday 9 October from 12pm to 2pm.*

*For all ages. No admission fee. 200GS Tour at 1pm.*

*(Solar Viewers, \$2 each. Add-on Activity: \$2.50.)*

The hobby of astronomy immediately brings to mind thoughts of darkened backyards and dimly-lit nighttime activities at HRPO. But patrons also have the option of visiting during

daylight hours to see our parent star.

Weather permitting, once monthly HRPO personnel offers three views of the Sun...

**12pm to 12:30pm** - *indirect projection onto white viewing surface* // [Learning Technologies Sunspotter]

**12:15pm to 1:15pm** - *safely-filtered optical light sent through standard telescope* // [Orion 10" Skyquest Dobsonian Reflector]

**12:30pm to 2:00pm** - *hydrogen-alpha light* // [Coronado Solar Max II 90mm]



## **STEM EXPANSION**

Saturday 23 October from 3:30pm to 7:30pm. For ages twelve to sixteen. \$15/\$18 per kid.

This program offers advanced topics, topic extensions and all-new games and activities to an older crowd. Certificates will be earned, and a section of archived experiments, some not seen in over fifteen years (and some *never* performed on site) take place.

\*\*\*\*\*

### ***Mr. Macklin's Jack O'Lantern***

***by David McCord - 1897-1997***

Mr. Macklin takes his knife  
And carves the yellow pumpkin face:  
Three holes bring eyes and nose to life,  
The mouth has thirteen teeth in place.  
Then Mr. Macklin just for fun  
Transfers the corn-cob pipe from his  
Wry mouth to Jack's, and everyone  
Dies laughing! O what fun it is  
Till Mr. Macklin draws the shade  
And lights the candle in Jack's skull.  
Then all the inside dark is made  
As spooky and as horribleful  
As Halloween, and creepy crawl  
The shadows on the tool-house floor,  
With Jack's face dancing on the wall.  
O Mr. Macklin! where's the door?





# OBSERVING NOTES SEPTEMBER

## Lacerta – The Lizard

**Position: RA 22.5, Dec.+45°**

*Note: For six years I have been writing these Observing Notes, featuring the 60 constellations we can see before midnight from Baton Rouge, that contain objects above magnitude 10. Beginning with the February 2019 newsletter, I began to update the constellations with new and expanded material, but the Sky Happenings calendar and associated information are new each month.*

### *Named Stars*

**Babcock's Star (HD 215441)**, mag. 8.81, 22 44 07.51 +55 35 21.2, is a variable star with a period of 9.4871 days. Also known as **HIP 112247**, and **GL Lacertae**.

**Taika (HAT-P-40)**, mag. 11.17, 22 22 03.0 +45 27 27, has one transiting planet in orbit.

### *Deep Sky:*

**AI 42A**, mag. 5.8, 22 46 54 +53 48 12, 36'x20' in size.

**AI 42B**, mag. 5.8, 22 51 18 +53 55 12, 32'x20' in size.

**NGC 7243**, mag. 6.4, 22 15 09 +49 53 54, 30' in size, is an open cluster of 40 stars; not well detached from the surrounding star field; modest range in brightness; magnitude of brightest star (**Struve 2890**, a triple star) is 8.5. A neat double star forms the vertex of a telescopic triangle near the middle of the group. The cluster is located 2.6° west-southwest of **Alpha Lacertae**. **NGC 7209** is 3° to the south, and on the east side of the cluster is the star **ADS 15785**. Also known as **H8-75**, **Cr 448**, **Lund 1009**, **Mel 240**, **OCL 221**, **OCL 221.0**, **Raab 48**, **Caldwell 16**, **C2213+496**, and **Best 59**.

**Str 60**, mag. 7.4, 22 23 33 +51 05 44, 14'x14' in size. Located 7' to the northwest of **IC 5217**.

**NGC 7209**, mag. 7.7, 22 05 08 +46 28 59, 25'x25' in size, is an open cluster of 98 stars; detached, no concentration of stars; small range in brightness; magnitude of brightest star is 9.0; a large cluster. The cluster contains the star **SS Lacertae**. Located 2.5° west of the star **2 Lacertae**, or 3° north of **NGC 7243**. Also known as **H7-53**, **Cr 444**, **Lund 1004**, **Mel 238**, **OCL 215**, **OCL 215.0**, **Raab 146**, and **C2203+462**.

**IC 1434**, mag. 9.0, 22 10 30 +52 50 00, 7' in size, is an open cluster of 40 stars, with the brightest star being magnitude 12.0. The cluster contains 6 "branches", and 3 of the brightest stars form a prominent triangle on the southern edge. The cluster is located about 2° west-northwest of **Beta Lacertae**. Also known as **Cr 445**, **Lund 1006**, **Mel 239**, **OCL 223**, **OCL 223.0**, **Raab 147**, and **C2208+525**.

**IC 1442**, mag. 9.1, 22 15 59 +59 59 06, 5' in size, is an open cluster of 104 stars; no concentration of stars; faint, loose diamond shape. Brightest star is magnitude 12.0. **NGC 7245** is 22' to the north-northwest. Also known as **Lund 1012**, **OCL 224**, and **C2214+538**.

**NGC 7245**, mag. 9.2, 22 15 18 +54 20 00, 5' in size, is an open cluster of 169 stars; brightest star is magnitude 12.75. There is a dark bar crossing the east side of the cluster. **King 9** is 10' to the northeast. Also known as **H6-29**, **Cr 449**, **Lund 1010**, **Mel 241**, **OCL 225**, **OCL 225.0**, **Raab 149**, and **C2213+540**.

**NGC 7295**, mag. 9.7, 22 27 52 +52 49 06, 2.0' in size, is an asterism considered to be a duplicate of the entry for **NGC 7296**, non-existent per the **RNGC**. Brightest star is magnitude 10.0. Also known as **OCL 228**, **Lund 1016**, and **Cr 451**.

**NGC 7296**, mag. 9.7, 22 28 01 +52 18 48, 4'x4' in size, is an open cluster with **GSC 3619-0835** at the

center. There is a bright red star (**BD +51 3383 = GSC 3619-2026 = IRAS 22259+5203**) on the west side of the cluster. Also known as **Cr 451, Lund 1016, OCL 228, OCL 228.0, H7-41, and C2226+520**. **BL Lacerta** is a **Blazer**, mag. 12.4 to 17.2, 22 02 43.3 +42 16 39, was originally thought to be a variable star, and was given a star designation. It is, in fact, the proto-typical blazer (blazing quasi-stellar object), a highly compact quasar associated with the supermassive black hole presumed to be lying at the core of an active (AGN) giant elliptical galaxy. The light that comes from **BL Lacertae** does not have the “thermal” spectrum of a hot body which normal stars and galaxies have. Instead, it has a “synchrotron” spectrum, with radiation right across the spectrum, in the radio, visible light, ultra-violet, and X-ray region, with no noticeable emission or absorption lines. Such radiation is associated with electrons being accelerated to near the speed of light in a magnetic field. This is a variable galaxy with a red shift (z) of 0.069. Also known as **VR 42.22.01, OY+401, and BL Lac 214**.

**Objects in Lacerta are as follows: 27 NGC; 7 IC; 67 UGC; 38 MCG; 5 Cr; 4 Mel; 19 PGC; 5 PK; 7 PNG; 15 Herschel; 4 h; 14 OCL; 9 Lund; 3 FSR; 34 CGCG; 1 King; 1 Teu; 2 Abell; 2 Berkley; 1 Caldwell; 4 Raab; 1 Cosmic 6; 1 Sh2; 1 DG; 1 HaWe; 4 Al; 1 LkHa; 2 MAC; 1 LeWa; 1 HBC; 2 Str; 1 Quasar; 2 Radio Galaxies; 1 VV; Lac OB1; BL Lac; 2 Min; 1 Merrill; 1 LBN; 1 B; and 1 IRAS; a total of 301 objects.**

### *Other Stars:*

**2 Lacertae**, mag. 4.55, 22 21 01.53 +46 32 11.6, is a double star. The secondary, at magnitude 11.0, is at PA 09°, and has a 25-year orbital period. Also known as **HD 212120, HIP 110351, and h 1755**.

**8 Lacerta A**, mag. 5.73, 22 35 52.28 +39 38 03.6, is a binary star in a system with three other stars. The B component is magnitude 6.3, at 22 35 52.0 +39 37 41.4, and the AB separation is 22.4”. The C component (**A1469**) is at magnitude 7.2, with an AC separation of 82”, and the D component is at magnitude 9.1, with an AD separation of 81.4”. The E component is at magnitude 5.7, with an AE separation of 337.8”. A star also known as **Σ2922, HD 214167, and HIP 111546**. The B star is also known as **HD 214168, and HIP 111544**.

**Roe 47**, mag. 5.8, 22 32 24 +39 47, is a multiple star system containing 5 components. The A component is at magnitude 5.8, and the B component is at magnitude 9.8. The AB separation is 43.1” at a PA of 158°. The C component is at magnitude 10.1, with an AC separation of 32.4” and a PA of 344°. The D component is at magnitude 9.3, with an AD separation of 81.8” at a PA of 144°. The E component is at magnitude 9.8, with a DE separation of 9.8” at a PA of 75°. Also known as **ADS 16031**.

**h 1756**, mag. 6.5, 22 21 54 +40 40, is a multiple star system containing 4 components. The A component is at magnitude 6.5. The B component is at magnitude 10.5, with an AB separation of 22.1” at a PA of 286°. The C component is at magnitude 13.0, with an AC separation of 22.4 at a PA of 325°. The D component is at magnitude 11.5, with an AD separation of 58” at a PA of 76°. Also known as **ADS 15874**.

**EV Lacertae**, mag.8.28, 22 46 49.23 +44 20 02.4, is a red dwarf variable flare star that emits X-rays. It is a fast-spinning star, and as a result, has a very strong magnetic field. Also known as **HIP 112460**.

**SAO 51891**, mag. 8.57, 22 20 07.03 +49 30 11.8, is a variable star and a flare star with a period of 2.62 days. Also known as **V383 Lacertae**.

**IRAS 22272+5435**, mag. 9.0, 22 29 10.37 +54 51 06.4, is a proto-planetary nebulae with a period of 130 days. Also known as **HD 235858, and V354 Lacertae**.

**HD 216536**, mag. 9.23, 22 35 48.0 +44 28 40, has one planet in orbit.

**IRAS 22223+4327**, mag. 9.69, 22 24 31.43 +43 43 10.9, is a proto-planetary nebulae with a period of 89 days. Also known as **V448 Lacertae**.

**ADS 16402B**, mag. 9.87, 22 57 46.83 +38 40 29.8, is a binary star. The secondary star is at magnitude 10.2, and has one orbiting planet, **HAT-P-1b**.

**PSR B2217+47**, 22 19 48.14 +47 54 53.9, is a pulsar.

**Stars in Lacerta: 15 Σ; 7 ΟΣ; 3 ΟΣΣ; 3 Hu; 16 Numbered; 10 h; 2 Roe; 45 Lettered; 6 Ho; 4 A;**

1 Al; 1 AG; 1 Arg; 42 V; 1 ADS; 1 HAT-P; 1 SAO; 2 Es; 2 Greek; 7  $\beta$ ; 2 IRAS; 1 PSR; and 6 WR Stars, for a total of 179 stars.

## *Sky Happenings: October 2021*

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

- Oct. 1<sup>st</sup> - Asteroid **Harmonia** is at opposition at 2 PM CDT.
- Oct. 3<sup>rd</sup> - **Venus** is at aphelion.
- Oct. 4<sup>th</sup> - Double shadow transit on **Jupiter** starts at 1:53 PM CDT.
- Oct. 6<sup>th</sup> - **New Moon** occurs at 6:05 AM CDT (Lunation 1222),  
**Pluto** is stationary at 8 AM CDT.
- Oct. 7<sup>th</sup> - **Mars** is in conjunction with the **Sun** at 11 PM CDT.
- Oct. 8<sup>th</sup> - The **Moon** is at perigee (225,797 miles or 363,386 km from **Earth**) at 12:28 PM CDT,  
Dwarf planet **Ceres** is stationary at 2 PM CDT.
- Oct. 9<sup>th</sup> - **Mercury** is in inferior conjunction at 11 AM CDT,  
The **Moon** passes 3° north of **Venus** at 2 PM CDT,  
Dusk: Low in the southwest, the waxing lunar sliver and brilliant **Venus** are 2.5° apart, in the  
scorpion's head, while **Antares** is 6° to their left.
- Oct. 10<sup>th</sup> - **Saturn** is stationary.
- Oct. 12<sup>th</sup> - **First Quarter Moon** occurs at 10:25 PM CDT.
- Oct. 14<sup>th</sup> - The **Moon** passes 4° south of **Saturn** at 2 AM CDT,  
Dusk: The waxing gibbous **Moon**, **Jupiter**, and **Saturn** form a triangle above the south-  
southeast horizon after sunset.
- Oct. 15<sup>th</sup> - The **Moon** passes 4° south of **Jupiter** at 5 AM CDT,  
Dusk: **Venus** is 1.5° to the upper right of **Antares**, and the planet will remain close to  
**Antares** for the next 2 evenings.
- Oct. 16<sup>th</sup> - **Venus** passes 1.5° north of **Antares** at 9 AM CDT.
- Oct. 17<sup>th</sup> - The **Moon** passes 4° south of **Neptune** at 9 AM CDT.
- Oct. 18<sup>th</sup> - **Mercury** is at perihelion,  
**Jupiter** is stationary at 6 AM CDT,  
Asteroid **Eris** is at opposition,  
**Mercury** is stationary at 8 PM CDT.
- Oct. 19<sup>th</sup> - Double shadow transit on **Jupiter** starts at 1:12 AM CDT.
- Oct. 20<sup>th</sup> - **Full Moon** occurs at 9:57 AM CDT.
- Oct. 21<sup>st</sup> - **Orionid Meteor Shower** peaks in the early hours, with the **Moon** just past full to severely  
hamper observations.
- Oct. 23<sup>rd</sup> - Dawn: Before sunrise, **Taurus** will be high in the west-southwest, with the waning gibbous  
**Moon** 4° to the left of the **Pleiades**.
- Oct. 24<sup>th</sup> - Dawn: The **Moon** is on the other side of the **Bull's** head, about 6.5° to the upper right of  
**Aldebaran**.
- Oct. 25<sup>th</sup> - **Mercury** is at greatest western elongation (18°) at 1 AM CDT,  
Dawn: The **Moon**, still in **Taurus**, is positioned midway between **Zeta** and **Beta Taurii**,  
The **Moon** is 1.7° north of **M35** at 9 PM CDT.
- Oct. 26<sup>th</sup> - Double shadow transit on **Jupiter** starting at 3:08 AM CDT.
- Oct. 27<sup>th</sup> - Dawn: High in the south, the waning gibbous **Moon** is in **Gemini**, around 5° to the lower  
right of **Pollux**.
- Oct. 28<sup>th</sup> - Last Quarter Moon occurs at 3:05 PM CDT.
- Oct. 29<sup>th</sup> - **Venus** is at greatest eastern elongation (47°) at 4 PM CDT.
- Oct. 31<sup>st</sup> - Dawn: **Mercury**, in **Virgo**, leads **Spica** above the horizon, with less than 5° separating them,  
**Mercury** passes 4° north of **Spica** at 9 PM CDT,  
Asteroid **Pallas** is stationary at 9 PM CDT.

## ***Planets:***

**Mercury** – **Mercury** reaches inferior conjunction with the **Sun** on October 9<sup>th</sup> – but there will be no transit across the **Sun** until November 13, 2032. The planet, in the morning sky after the conjunction, will have its finest dawn showing of 2021, and only the second time this year the planet sits above the horizon during the astronomical night, albeit barely so. The planet reaches greatest western elongation (18°) on the 25<sup>th</sup>, only a week after reaching perihelion on the 19<sup>th</sup>. On the 21<sup>st</sup>, the planet is at magnitude 0.0, and is nearly 5° high an hour before sunrise. On the 28<sup>th</sup>, it will be magnitude -0.7. On the 25<sup>th</sup>, the planet will rise more than 1.5 hours ahead of the **Sun** and stands 12° high above the east-southeast horizon at the start of civil twilight, at magnitude -0.7, in **Virgo**.

**Venus** – **Venus** is visible soon after sunset, low in the southwest. It begins the month at magnitude -4.2 and will brighten to -4.5 by October 25<sup>th</sup>. The planet is in **Libra** for the first week of the month and will cross into **Scorpius** on the 7<sup>th</sup>. Part of the 15<sup>th</sup> is spent crossing a small corner of **Ophiuchus** before returning to **Scorpius** and passing 1.5° north of **Antares** on the 16<sup>th</sup>. The planet returns to **Ophiuchus** on the 21<sup>st</sup> and stays there the rest of the month. On the 1<sup>st</sup>, the planet's disk is 19" and is 62% illuminated. The disk grows to 24" by the 27<sup>th</sup> and will reveal a half-lit phase. By **Halloween**, the disk will span 26" and will be less than 50% lit. On the 9<sup>th</sup>, the planet and the four-day-old **Moon** are less than 2.5° apart (**Moon** above **Venus**) in the southwest at dusk. On the 29<sup>th</sup>, the planet reaches greatest eastern elongation (47°). An hour after sunset the planet will be between 7° and 11° high.

**Mars** – **Mars** is in conjunction with the **Sun** on October 8<sup>th</sup>. It is not visible this month and will not emerge as a naked eye object at dawn until late November.

**Jupiter** – **Jupiter** is in eastern **Capricornus** all month, dimming slightly from magnitude -2.6 to -2.5. The planet's retrograde movement will slow to a halt on the 18<sup>th</sup> when it becomes stationary. The planet will stay within 2.1° of the star **Deneb Algedi (Delta Capricorni)** all month. On the 1<sup>st</sup>, the planet is 1.8° northwest of the star and will move to a point 2.1° northwest of the star by the 18<sup>th</sup>. Then the planet will return to within 1.9° of the star by the 31<sup>st</sup>. The planet sets about 3:10 AM local time on the 1<sup>st</sup>, and by 1:15 local time on the 31<sup>st</sup>. There are 3 double shadow transits of **Jupiter** in October. The first is on the 4<sup>th</sup> and starts with **Callisto's** shadow starting ingress at 11:58 AM CDT with **Ganymede's** shadow starting ingress at 3:53 PM CDT. **Callisto's** shadow will egress at 4:25 PM CDT with **Ganymede's** shadow's egress at 5:28 PM CDT. On the 18<sup>th</sup>, **Ganymede's** shadow starts ingress at 9:56 PM CDT with **Io's** shadow's ingress at 1:12 PM CDT on the 19<sup>th</sup>. **Ganymede's** shadow will egress at 1:30 AM CDT with **Io's** shadow starting egress at 3:29 AM CDT. The last double shadow transit occurs on the 26<sup>th</sup>. **Ganymede's** shadow will start transit at 1:59 AM CDT with **Io's** shadow starting ingress at 3:08 AM CDT. **Io's** shadow will egress at 5:24 AM CDT with **Ganymede's** shadow starting egress at 5:32 AM CDT.

**Saturn** – **Saturn** is in **Capricornus**, and halts its retrograde motion on October 10<sup>th</sup>, and will then resumes its eastward motion. The planet shines at magnitude 0.4 in early October and will dim by 0.1 magnitude in the latter half of the month. On the 13<sup>th</sup>, the planet will stand about 6° northeast of the waxing gibbous **Moon**. The ring system is tilted 19° to our line of sight and is clearly in view around the planet's 17" wide disk, with the northern face of the ring system now visible. The bright moon of the planet, **Titan**, is at magnitude 8.5 and will appear through a telescope north of the planet on the 5<sup>th</sup> and 21<sup>st</sup>, and south of the planet on the 13<sup>th</sup> and 29<sup>th</sup>. The trio of 10<sup>th</sup> magnitude moons – **Tethys**, **Dione**, and **Rhea** – that orbit closer to the planet are quite easy to spot. **Enceladus**, near magnitude 12, lies close to the bright edge of the rings and is more difficult to spot. **Iapetus** will reach superior conjunction with the planet on the 10<sup>th</sup> and will then move eastward reaching greatest elongation on the 29<sup>th</sup> with its darker face turned eastward dimming it to 12<sup>th</sup> magnitude, standing 8' east of the planet. The planet sets about 2 AM local time on the 1<sup>st</sup>, and just before midnight local time on **Halloween**.

**Uranus** – **Uranus** is approaching opposition, which will occur on November 5<sup>th</sup>. The planet is visible nearly all night. In early October it is best to wait a few hours after sunset to view it. The planet lies about 16° west of the **Pleiades** in a sparse region of southern **Aries**. At magnitude 5.7, it should be easy to spot. The planet, on the 1<sup>st</sup>, is 23' from **Omicron Arietis**. By the 10<sup>th</sup>, it is less than 10' north of **Omicron Arietis**. On the 24<sup>th</sup>, the planet is the width of a **Full Moon** west of **Omicron Arietis**. **Omicron Arietis** is 2.9° due north of the star **38 Arietis**, which is itself 2.3° due north of the 4<sup>th</sup> magnitude star **Mu Ceti**.

Through binoculars place **38 Arietis** in the lower right of your view and look for a 6<sup>th</sup> magnitude double star. One of these “stars” is **Uranus**.

**Neptune** – **Neptune** is a month past opposition and is visible most of the night in **Aquarius**. Binoculars will show a magnitude 7.7 planet well. The planet begins the evening in the southeast sky and reaches its highest point above the southern horizon before local midnight. October opens with the planet less than 4° east of 4<sup>th</sup> magnitude star **Phi Aquarii**. The gap will shrink to 3.3° by the 31<sup>st</sup>. Look roughly 6.5° south to the **Circlet of Pisces** for a triangle of 6<sup>th</sup> magnitude field stars. The planet is west of this group of stars all month. On the 17<sup>th</sup>, the planet will be 7° west of the gibbous **Moon**. The planet currently spans 2”, and a telescope at high magnification on a steady night of seeing will show its bluish-green disk.

**Pluto** – **Pluto** is in **Sagittarius** at about 19 44 30 -22 55, or about 0.5° southeast of the star **HD 186332**. On the 15<sup>th</sup>, **Pluto** will be at 19 44 54 -22 56 at magnitude 15.2 and having a disk of 0.1”.

**Moon** – The Moon’s favorable librations are as follows:

Rydberg Crater on October 3<sup>rd</sup>; Rieman Crater on the 12<sup>th</sup>; Mercurius Crater on the 16<sup>th</sup>; and Vallis Baade on the 31<sup>st</sup>.

Greatest North Declination on the 27<sup>th</sup> (+26.2°)

Greatest South Declination on the 12<sup>th</sup> (-26.1°)

Libration in Longitude: East Limb Most Exposed on the 16<sup>th</sup> (+6.0°)

West Limb Most Exposed on the 3<sup>rd</sup> (-6.2°) and on the 31<sup>st</sup> (-7.1°)

Libration in Latitude: North Limb Most Exposed on the 16<sup>th</sup> (+6.7°)

South Limb Most Exposed on the 4<sup>th</sup> (-6.6°) and on the 31<sup>st</sup> (-6.8°)

**Asteroids / Minor Planets** Asteroid **1 Ceres** – **Ceres** positions, according to the *RASC Observer’s Handbook, 2021 USA Edition*, are as follows: On October 3<sup>rd</sup> – 04 44.28 +16 00.9, at magnitude 8.2 on the **Orion/Taurus** border; on the 13<sup>th</sup> – 04 44.48 +16 08.9, at magnitude 8.1 along the **Orion/Taurus** border; and on the 23<sup>rd</sup> – 04 41.98 +16 15.9, at magnitude 7.8 in **Orion**.

Asteroid **2 Pallas** – **Pallas**’s positions, according to the *RASC Observers Handbook, 2021 USA Edition*, are as follows: On October 3<sup>rd</sup> – 22 54.07 -05 09.9, at magnitude 8.9 in **Aquarius**; on the 13<sup>th</sup> – 22 49.09 -07 08.9, at magnitude 9.1 in **Aquarius**; and on the 23<sup>rd</sup> – 22 46.05 -08 50.3, at magnitude 9.3 in **Aquarius**. **Pallas**’s positions, *by my estimates*, are as follows: On the 1<sup>st</sup> – about 4° east and a little south of **Kappa Aquarii**, or about 2.5° north and a touch east of **Lambda Aquarii**; on the 5<sup>th</sup> – about 1.6° due north of **Lambda Aquarii**; on the 10<sup>th</sup> – about 1° northwest of **Lambda Aquarii**; on the 15<sup>th</sup> – about 1.2° due west and a touch south of **Lambda Aquarii**; on the 20<sup>th</sup> – about 1.75° southwest of **Lambda Aquarii**; on the 25<sup>th</sup> – about 2.3° southwest of **Lambda Aquarii**; and on the 30<sup>th</sup> – about 3° south-southwest of **Lambda Aquarii**.

Asteroid **6 Hebe** – **Hebe**’s positions, according to the *RASC Observer’s Handbook, 2021 USA Edition*, are as follows: On October 3<sup>rd</sup> – 19 29.21 -21 46.3, at magnitude 9.6 in **Sagittarius**; on the 13<sup>th</sup> – 19 40.99 -22 22.0, at magnitude 9.7 in **Sagittarius**; and on the 23<sup>rd</sup> – 19 55.08 -22 46.3, at magnitude 9.9 in **Sagittarius**.

Asteroid **12 Victoria** – **Victoria**’s position on the 8<sup>th</sup> of October, according to the *RASC Observer’s Handbook, 2021 USA Edition*, is 20 27 -06 10, in **Aquila**.

Asteroid **40 Harmonia** – **Harmonia**’s positions, according to the *RASC Observer’s Handbook, 2021 USA Edition*, are as follows: On October 3<sup>rd</sup> – 00 42.61 -03 58.9, at magnitude 9.4 in **Cetus**; on the 13<sup>th</sup> – 00 33.26 -04 48.0, at magnitude 9.6 in **Cetus**; and on the 23<sup>rd</sup> – 00 25.22 -05 18.0, at magnitude 9.8 in **Cetus**.

Asteroid **89 Julia** – **Julia**’s positions, according to the *RASC Observer’s Handbook, 2021 USA Edition*, are as follows: On October 3<sup>rd</sup> – 21 31.51 +01 26.9, at magnitude 9.7 in **Aquarius**; and on the 13<sup>th</sup> – 21 31.74 +01 46.6, at magnitude 9.9 in **Aquarius**.

**Comets** – Comet **4P/Faye** – **Faye**, a morning comet, will have the following positions according to *ALPO*: On October 1<sup>st</sup> – 06 00.5 +16 14, at magnitude 10.3 in **Orion**; on the 11<sup>th</sup> – 06 19.3 +14 51, at magnitude 10.4 in **Orion**; on the 21<sup>st</sup> – 06 34.6 +13 18, at magnitude 10.4 in **Gemini**; and on the 31<sup>st</sup> – 06 46.1 +11 44, at magnitude 10.6 in **Monoceros**. Comet **4P/Faye** – **Faye**’s positions, *by my estimates*, are as follows: On October 1<sup>st</sup> – about 2° northwest of **Nu Orionis**; on the 5<sup>th</sup> – about 0.8° north of **Nu Orionis**; on the 10<sup>th</sup> – about 3° due east of **Nu Orionis**; on the 15<sup>th</sup> – about 3.5° southwest of **Gamma Geminorum**; on the 20<sup>th</sup> – about 3° south

and a touch west of **Gamma Geminorum**; on the 25<sup>th</sup> – about 1.5° due west and a touch south of **Xi Geminorum**; and on the 30<sup>th</sup> – about 1° due south of **Xi Geminorum**.

Comet **6P/d'Arrest – d'Arrest**, an evening comet, will have the following positions according to **ALPO**: On October 1<sup>st</sup> – 18 43.7 -27 26, at magnitude 10.6 in **Sagittarius**; on the 11<sup>th</sup> – 19 21.8 -30 00, at magnitude 10.2 in **Sagittarius**; on the 21<sup>st</sup> – 20 01.2 -31 27, at magnitude 10 in **Sagittarius**; and on the 31<sup>st</sup> – 20 40.5 -31 47, at magnitude 9.8 in **Microscopium**.

Comet **8P/Tuttle – Tuttle**, a morning comet, will have the following positions according to **ALPO**: On October 1<sup>st</sup> – 10 36.0 -21 40, at magnitude 8.6 in **Hydra**; on the 11<sup>th</sup> – 11 11.7 -28 35, at magnitude 9.0 in **Hydra**; on the 21<sup>st</sup> – 11 48.3 -34 35, at magnitude 9.5 in **Hydra**; and on the 31<sup>st</sup> – 12 26.6 -39 35, at magnitude 10.1 in **Centaurus**.

Comet **19P/Borrelly – Borrelly**, probably not visible in the **Northern Hemisphere** until November, will have the following positions according to **ALPO**: On October 1<sup>st</sup> – 23 29.0 -58 49, at magnitude 13.0 in **Tucana**; on the 11<sup>th</sup> – 23 15.8 -57 42, at magnitude 12.5 in **Tucana**; on the 21<sup>st</sup> – 23 07.2 -55 31, at magnitude 12.1 in **Grus**; and on the 31<sup>st</sup> – 23 04.2 -52 26, at magnitude 11.6 in **Grus**.

Comet **67P/Churyamov-Gerasimenko – 67P**, a morning comet, will have the following positions according to **ALPO**: On October 1<sup>st</sup> – 04 59.9 +21 28, at magnitude 10.4 in **Taurus**; on the 11<sup>th</sup> – 05 45.4 +23 41, at magnitude 10.0 in **Taurus**; on the 21<sup>st</sup> – 06 31.3 +25 16, at magnitude 9.6 in **Gemini**; and on the 31<sup>st</sup> – 07 14.5 +26 11, at magnitude 9.3 in **Gemini**. Comet **67P/Churyamov-Gerasimenko – 67P's** positions, *by my estimates*; are as follows: On October 1<sup>st</sup> – about 0.5° due west of **Iota Taurii**, or about 1.5° north-northwest of the star **106 Taurii**; on the 5<sup>th</sup> – about 1.7° due west and a touch north of the star **114 Taurii**, or about 3.5° due west and a touch north of **M1**; on the 10<sup>th</sup> – about 1.5° due east and a little south of the star **121 Taurii**, or about 2.2° north and a little east of **Delta Taurii**; on the 15<sup>th</sup> – about 0.7° due north and a touch east of the star **1 Geminorum**, or about 3.2° northwest of **Eta Geminorum**; on the 20<sup>th</sup> – about 3.5° north-northeast of **Mu Geminorum**; on the 25<sup>th</sup> – about 1.5° due east and a touch north of **Epsilon Geminorum**, or about 1.5° due south of **NGC 2266**; and on the 30<sup>th</sup> – about 4° due south and a touch east of **Tau Geminorum**.

Comet **104P/Kowal – Kowal**, an evening comet, will have the following positions according to **ALPO**: On October 1<sup>st</sup> – 21 50.4 -05 11, at magnitude 14.7 in **Aquarius**; on the 11<sup>th</sup> – 21 43.8 -06 55, at magnitude 14.2 in **Aquarius**; on the 21<sup>st</sup> – 21 42.2 -08 23, at magnitude 13.7 in **Capricornus**; and on the 31<sup>st</sup> – 21 46.1 -09 27, at magnitude 13.2 in **Capricornus**.

Comet **C/2019 L3 (ATLAS) – L3**, a morning comet, will have the following positions according to **ALPO**: On October 1<sup>st</sup> – 07 30.0 +43 07, at magnitude 11.1 in **Auriga**; on the 11<sup>th</sup> – 07 37.6 +42 18, at magnitude 10.9 in **Lynx**; on the 21<sup>st</sup> – 07 43.3 +41 27, at magnitude 10.8 in **Lynx**; and on the 31<sup>st</sup> – 07 46.4 +40 36, at magnitude 10.6 in **Lynx**.

Comet **C/2021 A1 (Leonard) – Leonard**, a morning comet, will have the following positions according to **ALPO**: On October 1<sup>st</sup> – 11 18.6 +37 44, at magnitude 14.3 in **Ursa Major**; on the 11<sup>th</sup> – 11 27.9 +36 42, at magnitude 13.8 in **Ursa Major**; on the 21<sup>st</sup> – 11 38.1 +35 47, at magnitude 13.2 in **Ursa Major**; and on the 31<sup>st</sup> – 11 49.9 +34 58, at magnitude 12.4 in **Ursa Major**.

**Meteor Showers** – There is only one **Major (Class I)** meteor shower in October. The **Orionids**, active from October 3<sup>rd</sup> through November 12<sup>th</sup>, peaks on October 21<sup>st</sup>, maximum zenith hourly rate (mzhr) of 23.

There are 4 **Minor (Class II)** meteor showers in October. The **Epsilon Geminids**, active from September 27<sup>th</sup> through November 8<sup>th</sup>, peaking on October 18<sup>th</sup> with a mzhr of 2. The **Leonis Minorids**, active from October 13<sup>th</sup> through November 3<sup>rd</sup>, peaking on October 23<sup>rd</sup> with a mzhr of 2. The **Southern Taurids**, active from September 22<sup>nd</sup> through December 2<sup>nd</sup>, peaks on November 5<sup>th</sup> with a mzhr of 5. The **Northern Taurids**, active from October 13<sup>th</sup> through December 2<sup>nd</sup>, peaks on November 12<sup>th</sup> with a mzhr of 5.

There is one **Variable (Class III)** meteor shower in October. The **Draconids**, active from October 8<sup>th</sup> through October 9<sup>th</sup>, peaking on October 8<sup>th</sup>.

There are 10 **Weak (Class IV)** meteor showers (with a mzhr of <2) in October. The **Daytime Sextantids**, active from September 22<sup>nd</sup> through October 13<sup>th</sup>, peaking on October 3<sup>rd</sup>; the **October Camelopardalids**, active from October 5<sup>th</sup> through October 7<sup>th</sup>, peaking on October 6<sup>th</sup>; the **October Ursae Majorids**, active from

October 10<sup>th</sup> through October 20<sup>th</sup>, peaking on October 15<sup>th</sup>; the **Tau Cancrids**, active from September 23<sup>rd</sup> through November 12<sup>th</sup>, peaking on October 22<sup>nd</sup>; the **Lambda Ursae Majorids**, active from October 18<sup>th</sup> through November 7<sup>th</sup>, peaking on October 28<sup>th</sup>; the **Southern Draconids**, active from October 29<sup>th</sup> through November 8<sup>th</sup>, peaking on November 4<sup>th</sup>; the **Chi Taurids**, active from October 24<sup>th</sup> through November 13<sup>th</sup>, peaking on November 4<sup>th</sup>; the **Kappa Ursae Majorids**, active from October 28<sup>th</sup> through November 17<sup>th</sup>, peaking on November 5<sup>th</sup>; the **Andromedids**, active from October 24<sup>th</sup> through December 2<sup>nd</sup>, peaking on November 6<sup>th</sup>; and the **Omicron Eridanids**, active from October 23<sup>rd</sup> through December 2<sup>nd</sup>, peaking on November 13<sup>th</sup>.

***When to View the Planets:***

**Evening Sky**

Venus (southwest)  
 Saturn (south)  
 Jupiter (southeast)  
 Uranus (east)  
 Neptune (east)

**Midnight**

Saturn (southwest)  
 Jupiter (southwest)  
 Uranus (southeast)  
 Neptune (south)

**Morning Sky**

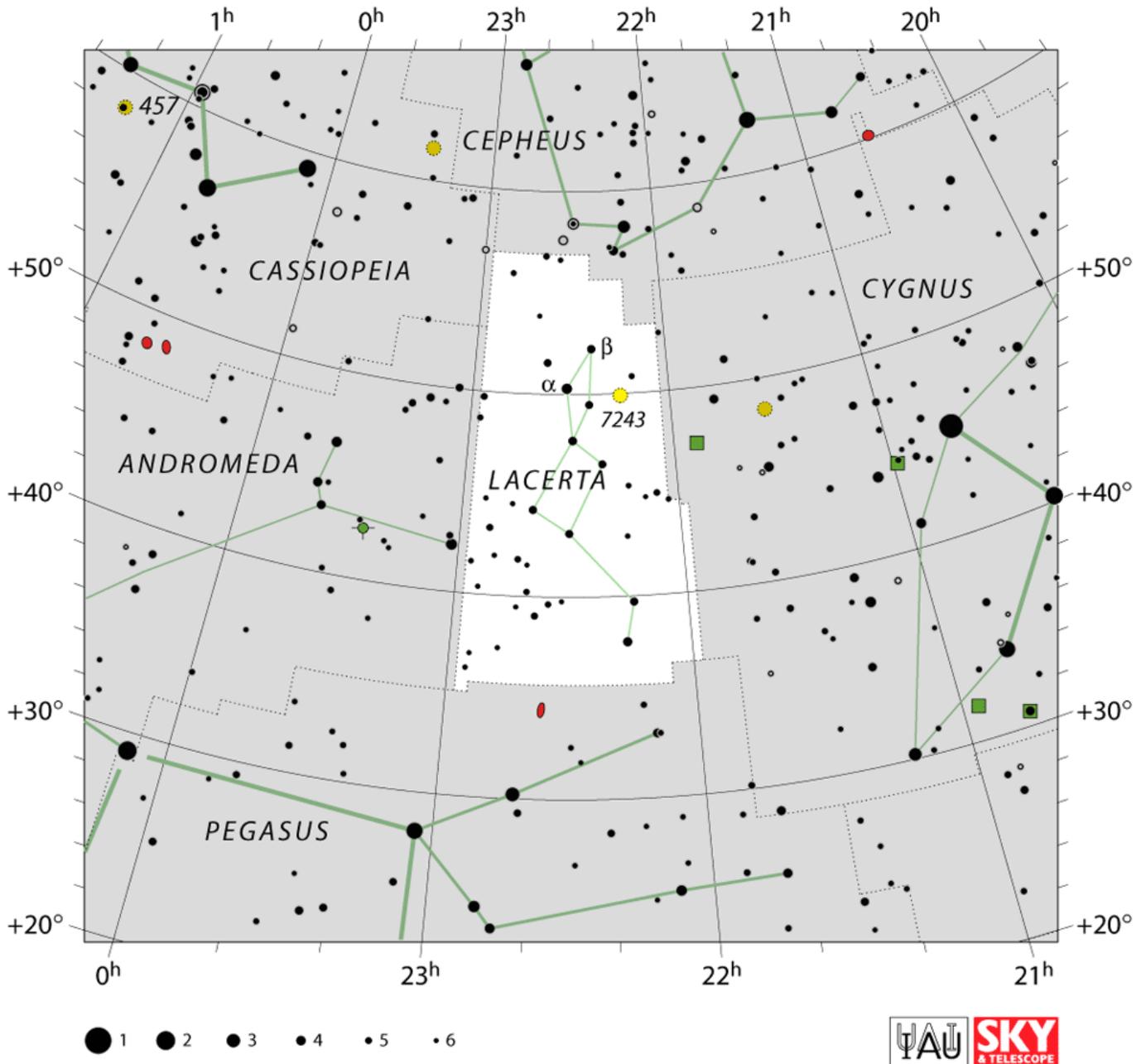
Mercury (east)  
 Uranus (west)

**Mythology:**

**Lacerta – The Lizard**

The inconspicuous constellation, sandwiched between Cygnus and Andromeda, was introduced by the Polish astronomer Johannes Helvetius in his star atlas “Firmamentum Solaescianum” in 1687. Helvetius also gave an alternate title of “Stellio the Newt” to the constellation, which soon fell into disuse. Lacerta’s stars are fourth magnitude and fainter, and none have names, nor are there any legends associated with the constellation.





**The End**