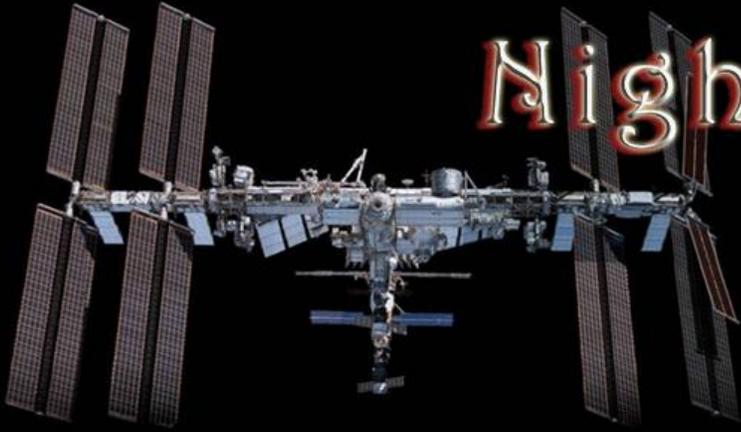


# Night Visions



March 2022

## Newsletter of the *Baton Rouge Astronomical Society*

International Space Station, as pictured from the SpaceX Crew Dragon Endeavour during a fly around of the orbiting lab that took place following its undocking from the Harmony module's space-facing port on Nov. 8, 2021. *Credits: NASA See Page 9 for article.*

**Monthly Meeting March 14<sup>th</sup> at 7:00 PM, in person**

*You may also join this meeting via [meet.jit.si/BRASMeet](https://meet.jit.si/BRASMeet)*

*(Monthly meetings are held on 2<sup>nd</sup> Mondays of the month, at Highland Road Park Observatory)*

***PRESENTATION: The Pleiades, by Merrill Hess***

## *What's In This Issue?*



President's Message  
BRAS Calendar  
Monthly Meeting Minutes  
Business Meeting Minutes  
Outreach Report  
Light Pollution Committee  
Globe At Night  
ALCON 2023



**[Article: Axiom 1 Launch, plans for International Space Station](#)**

**HRPO EVENTS**

**OBSERVING NOTES – Ursa Minor**

**[www.braastro.org](http://www.braastro.org)**

***Like this newsletter? See PAST ISSUES online back to 2009  
Baton Rouge Astronomical Society Facebook Page  
BRAS YouTube Channel – Monthly Speakers via Jitsi***

## President's Message

February was busy! The BRAS computer at HRPO died and needs to be replaced. Ben T. and Trey A. have been tasked to find a replacement, which could be a desktop or a laptop.

The next MOON night will be on Friday March 11<sup>th</sup> from 8 PM until 12 AM – after the HRPO Edge of Night event for the public that should end at 7:45 PM. (See Calendar insert below.)

ALCon 2023 is moving along. Steven will give an update at the general meeting on March 14<sup>th</sup>.

I was invited to a meeting of the **ICCGBR (Inter-Civic Council of Greater Baton Rouge)** on February 8<sup>th</sup>. 31 civic groups and non-profit organizations are members. I believe that BRAS should become a member of this organization. The yearly dues are \$25.00, and the meetings are the 2<sup>nd</sup> Tuesday of every month. Meetings are held at the Hunan Chinese Restaurant on South Sherwood Blvd. at 7 PM. There is a buffet (\$19.00/person) – all you can eat brought to your table, with to-go boxes for whatever is not eaten there. We would be allowed two attendees per meeting.

I was invited by Lowell Tilley (Steven Tilley's father), to speak at the **7:30 AM meeting of the Cortana Kiwanis** chapter at the Piccadilly restaurant on South Sherwood Blvd. I spoke about BRAS, Light Pollution, and ALCon 2023. They gave BRAS a nice write-up in their newsletter. **See Page 7.**

The IAU has created an "**IAU Centre for the Protection of the dark and Quiet Sky from Satellite Constellation Interference.**" The Centre co-ordinates collaborative multi-disciplinary international efforts with institutions and individuals and works across multiple geographic areas to help mitigate the negative impact of satellite constellations on ground-based optical and radio astronomy observations as well as humanity's enjoyment of the night sky.

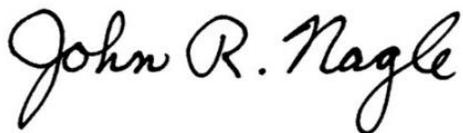
Although astronomers, professional and amateur, are not happy with Elon Musk and his Starlink satellite constellations, I must appreciate his activating the Starlink system over Ukraine and sending terminals to them.

It's great to be doing Outreach again. See Ben's report on completed and up-coming Events, **Page 6.**

This March newsletter completes the updating of my Observing Notes, which I began in 2013. There are 62 constellations in the series, and a **key** to the month and year of Night Visions that each writeup appears in is now on the BRAS website. Click on BRAS Links menu/ Newsletter Archive. Look for **CONSTITUTION OF THE MONTH** (or click this link)..

BRAS needs to fill the Vice-President position. The VP's duties are to arrange for the speaker at BRAS monthly member meetings (we all pitch in and help on this duty) and to conduct meetings when the President is not present. We also need to fill the position of the Chairperson for the Light Pollution Committee. The previous chair, that's me, now has all the duties I can handle. If you would like to volunteer (before we start twisting arms!), let me know at [president@brastro.org](mailto:president@brastro.org).

Clear Skies  
John Nagle, 2022 President



### Upcoming BRAS Meetings:

**Monthly Member Meeting – 7 pm Monday, March 14th at the Observatory, in person and via Jitsi**

**Light Pollution: 6 pm Wednesday, March 30. (In person only, Open to the public), followed by . . .**

**Monthly Business Meeting: 7 pm Wednesday, March 30, via Jitsi (Members Only)**

**MOON (Members Only Observing Night) March 11<sup>th</sup> from 8pm – 12am , at HRPO after Edge Of Night**

**ALCon 2023 (“Astronomical Gumbo”) Committee Meeting TBA**



## Monthly Meeting Minutes – February 14<sup>th</sup>, 2022, 7 p.m.

Welcome by the president, John Nagle.

- John introduced Trevor McGuire, a former member of our club who is now a resident of Helsinki, Finland. The title for his lecture was **High Latitude Astronomy**. This talk covered advantages, disadvantages, and some interesting observations about astronomy done near the Arctic Circle (66.3 degrees N.), specifically in Finland.
- John mentioned the following news: They have found a third planet around Proxima Centauri (Proxima Centauri D). The Webb telescope is still working on mirror alignment; it uses a camera to look back at the main mirror on this telescope to help with the set up. Elon Musk sent up a Falcon 9 rocket with 49 Starlink satellites; 40 of those were disabled in a solar storm and had to be destroyed. A rogue black hole was discovered several thousand light years away floating through space; this was picked up through gravitational lensing. 1708bi, a possible exomoon for a Jupiter-sized exoplanet, was discovered. The Parker Solar Probe was able to take pictures of the Venusian landscape through a break in the clouds on Venus while it was looping around the planet for a gravity assist in its travel around the sun. IAU is concerned about satellite constellations and formed a group to look into this; this means there will be rules coming on this (see their front page for more details).
- Ben was not available to discuss outreach, so John filled in. Sidewalk Astronomy at Perkins Rowe was sparsely attended; Chris K., Chris R., Scott C., Ben, and Coy showed up. There was a good crowd at the Makers Market at 1857; Scott C. and Chris R. handled that event. Everyone was reminded of the event for the homeschoolers at the BREC park toward the end of February and the Rockin' at the Swamp event in March at Bluebonnet Swamp.
- Chris spoke about HRPO news. He said he talked to Matthew Penny and sent schedules of the March meeting. He mentioned the ALCON meeting coming up. He also noted the outstanding work order list that he sent this year was the same as the one he sent last year in February. The next newsletter will have copies of the two Chris Carlton pictures that are going to be used as raffle prizes.
- Steven had the ALCON 2023 update. Carroll Iorg is still working on the deal with the hotel; hopefully things will come together soon on this.  
John mentioned that he had attended the ICC meeting. This group exists to aid organizations like ours; they meet the second Tuesday of each month. This will be discussed in a future business meeting. John was also scheduled to attend the Kiwanis breakfast the Thursday following the BRAS meeting in

### 2022 Officers:

**President:** John Nagle

president@brastro.org

**VP:**

vice-president@brastro.org

**Secretary:** Roz Readinger

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@brastro.org

Merrill Hess

lightpollution@brastro.org

??????

newsletter@brastro.org

Michele Fry

observing@brastro.org

John Nagle

outreach@brastro.org

Ben Toman

public\_relations@brastro.org

Scott Cadwallader

webmaster@brastro.org

Frederick Barnett

order to talk about our organization. There is also the possibility that James E. will be able to connect us with the Lions organization. We are still looking for someone to fill the VP position and someone to chair LPC. Jim G. volunteered for the VP position and spoke with John afterwards. Chris K. asked about the status of the new members kit; this will be voted on at the next business meeting.

Submitted by Roz Readinger, Secretary

## 2023 Astronomical League Convention in Baton Rouge!

BRAS has the honor of being the first to host an AL-CON in Louisiana since AL's inception in 1939.

### Our theme will be "Astronomical Gumbo"

This theme represents the blend of diverse subfields within the vast field of astronomy. People from all over the globe will be in attendance for the biggest yearly gathering of amateur astronomers in the nation. This convention will offer a large range of benefits not only to BRAS, but to HRPO, other nearby astronomy facilities, and the tourism industry of Baton Rouge. For example, the publicity will bring in many new club members and allow us to reach a much larger audience to share our love of astronomy with. There's not a better time than now to get involved, and lots of help will be necessary to make this event one to remember. Volunteers from all areas of any skill level are welcome to join any of the subcommittees: Scheduling, Finance, Publicity/Communications/Photography, Venue & Housing, Transportation, and Reports.

**Next Full committee meeting: TBA**

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)

## REGISTRATION FOR THE 2022 CONVENTION IN ALBUQUERQUE BEGINS ON MARCH 15, 2022

Note from AL: Due to technical issues with our software, registration has been delayed one month.



## **Business Meeting Minutes –February 23<sup>th</sup>, 2022, 7 p.m.**

(meeting is the last Wednesday of the month, in person, at HRPO)

**Note:** Agenda items were not available due to John being absent.

Below is a summary of what was discussed (three top items from Roz's notes).

1. The BRAS computer is dead. It was suggested that the Program Aides at the Observatory be allowed to take a look to see if they could revive it. It was mentioned that Ben and Trey were responsible for finding a computer to handle our needs; the suggestion was made to check with them.
2. Mention was made of the need to finish the Light Pollution model. Different ways to finish it up were explored. A request was made to get an update on this by the time of the next BRAS meeting. Scott agreed to talk to John on this matter.
3. We need to pick a date for the winter MOON event. A suggestion was made by Chris to have it at set times per year because BRAS can have these times (plus the night for Martian Opposition when that happens) at the Observatory. We decided to have the next MOON event on March 11<sup>th</sup> from 8pm – 12am; this will happen after the Edge of Night event at the Observatory that ends at 7:45 the same night. It was requested that the viewing opportunity at the Observatory after the BRAS meeting be included in the newsletter.

The following are Chris K. proposals at the Business Meeting:

\*that BRAS donate a Galileoscope to University Terrace

\*that our webmaster (with assistance if necessary) upgrade to BRAS and HRPO websites from HTML3 to HTML4

\*that we have our definition for “quorum” for the three meeting types (public, business, LPC) on paper and easily accessible by officers

\*that we bring the presumably unfinished light pollution scale model to HRPO, and assign periodic work until it is finished

Chris also asked about the car decals. When Scott said they had yet to be bought (presumably) Chris said that he'd buy them and have BRAS reimburse him.

Minutes submitted by Roz Readinger



## Outreach Report

Hi Everyone,

We had a couple of nice outreach events last month and we have more coming up. Of particular note was our **successful implementation of EAA (Electronic Assisted Astronomy)** at the last Sidewalk Astronomy event at Perkins Rowe.

We were able to have a scope set up with an astro-video camera attached to it. We even projected that image onto a large screen which worked to attract even more attention to our activities. Our target was M42, the Orion Nebula and people were able to take a look at it through another scope nearby, then see it in much more detail (and in color!) via the video camera. With that setup, we were able to talk to people not only about the differences in how our eyes work versus how a camera is able to capture light, but we could also point out the effects of light pollution in a very immediate, tangible example. On a night where we would normally have been restricted to only showing the Moon and less than a handful of brighter objects, we were able to offer up views of an object that is normally all but invisible in such light polluted areas. We're looking forward to utilizing the setup at future events.

Speaking of future events, we have a few coming up. Take a look at the list below and be sure to let me know ASAP if you would like to help out with any of them. For you first timers, training will be provided on site. And speaking of training...we'll plan to reboot our **Night Sky Network Toolkit Training Sessions** this month. (See below)

### Upcoming Events:

**Tuesday, March 8th**

6pm-9pm

Sidewalk Astronomy at Perkins Rowe

**Saturday, March 12th**

9am-4pm

Rockin' At The Swamp



*Our main scope array for the evening. Coy W. is seen working on his rig providing views to the patrons.*



*Me with my 10" XTG Dob fitted with a MallinCam DS287c astro-video camera running into a laptop.*

Bluebonnet Swamp and Nature Center  
(Multiple people needed for shifts throughout the day)

**Sunday, March 20th**

1pm-3pm

Toolkit Learning Session

Highland Road Park Observatory

(We'll get together and learn/discuss how to use various toolkits we've earned)

**Saturday, March 26th**

5pm-9pm (We don't need to show up until closer to dark)

Mid City Makers Market at Circa 1857 on Government St

**Sunday, April 3rd**

9:30am-5pm

Zippity Zoo Fest at Baton Rouge Zoo

(Several people needed for shifts throughout the day)

**Wednesday, April 6th**

5:30pm-8pm

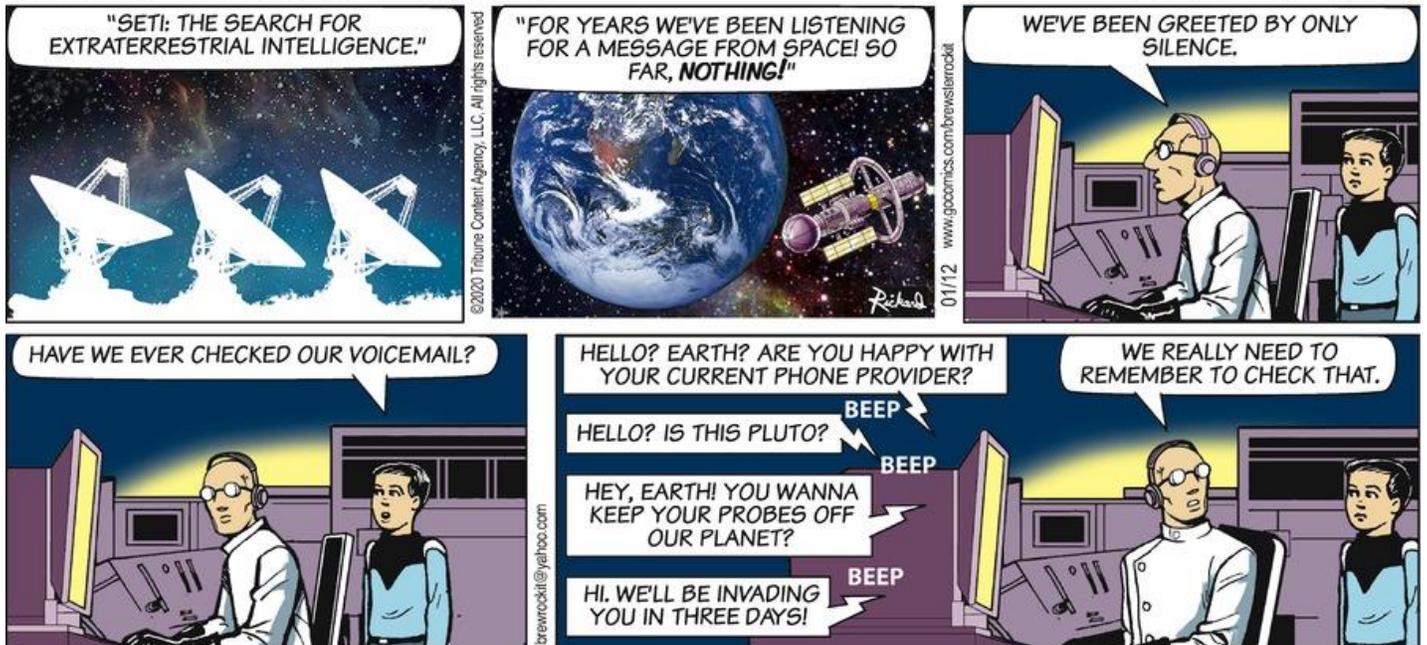
Oak Grove Primary STEAM Night

Of course, we have other events that are coming up later, too, so be on the lookout for invitations. (e.g., International Astronomy Day, future Sidewalk Astronomy and Makers Market events, etc.)

Clear Skies, Ben Toman

**BREWSTER ROCKIT: SPACE GUY!**

**BY TIM RICKARD**



**John Nagle – Observing the Heavens**  
**Thursday, February 17, 2022**

By Lowell Tilley



February Program Chair **Lowell Tilley**, **John Nagle**,  
 President **Tommy Mackey**

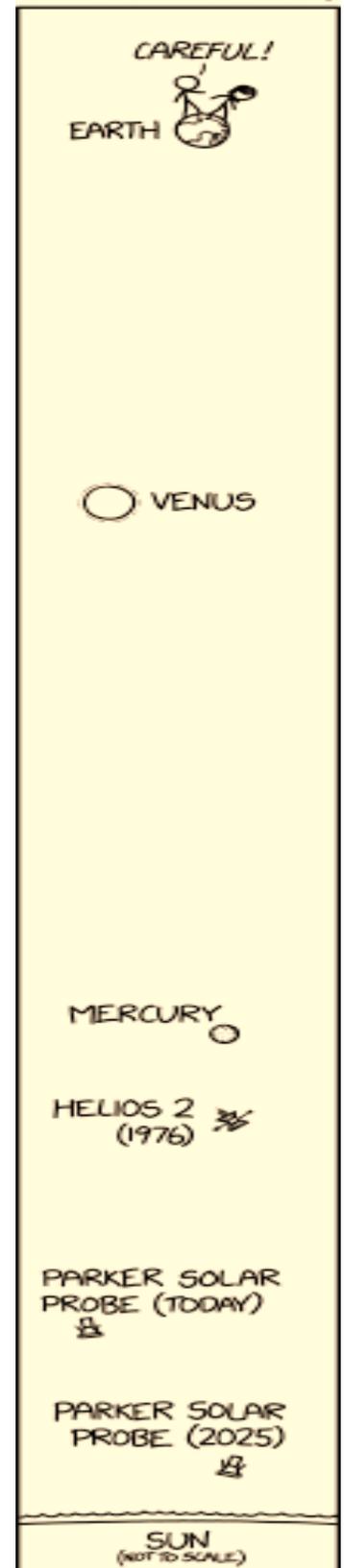
The speaker for the Feb. 17 meeting was John Nagle, current and past President of the Baton Rouge Astronomical Society (BRAS), which celebrated its 40th anniversary this past December. He and his wife have been members of BRAS for the past 17 years.

BRAS holds its monthly meetings at the Highland Road Observatory (HRPO), and the club is an integral part of helping Baton Rouge Recreation and Park Commission (BREC) run its vigorous astronomical educational programs there. BRAS members are also active in Outreach to local schools and at night venues around town, where people can look through telescopes and interact with educational materials. BRAS members operate the 20" telescope at HRPO.

BRAS is also active in fighting to reduce Light Pollution in Louisiana. For the past 9 years, John has been collating what he calls OBSERVING NOTES, as well as SKY HAPPENINGS, which help amateur astronomers know what to look for in the night sky on what days. These are posted monthly in *NIGHT VISIONS*, the newsletter of the club, of which his wife, Michele Fry, is the editor. Past editions of Night Visions are available for download at the BRAS website, [www.braastro.org](http://www.braastro.org)

The club is a member of the Astronomical League (AL) and planning to host their 2023 AL Convention in Baton Rouge. This is an international event, and a large responsibility and a great honor for BRAS. This will bring visitors from all over the world to Baton Rouge.

LOOKING DOWN  
 TOWARD THE SUN  
 AND THE  
 PARKER SOLAR PROBE  
 (DISTANCES ARE TO SCALE,  
 SIZES ARE NOT TO SCALE)





## LPC (Light Pollution Committee) Report

This committee meets at 6:00, same day as the 7:00 BRAS Business Meeting  
Meetings are on the last Wednesday of the month.  
Everyone is welcome to join in.

There was no LPC Meeting due to a lack of a quorum.

.John Nagle, LPC Chair pro-tem

\*\*\*\*\*

## Globe At Night

The target for the Globe at Night program is  
**Leo from March 23<sup>rd</sup> through April 1st**

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.

\*\*\*\*\*

## BRAS subreddit and a Discord server.

**Our subreddit** has been set up for us to reach out to the public. Please join us on there. <https://www.reddit.com/r/BRASastro/>

**Our Discord server** is for Members only, and requires the download of a free app. It's a fun place for us to hang out. To join the discord, email [safey2007@gmail.com](mailto:safey2007@gmail.com) with the subject **BRAS Discord**.

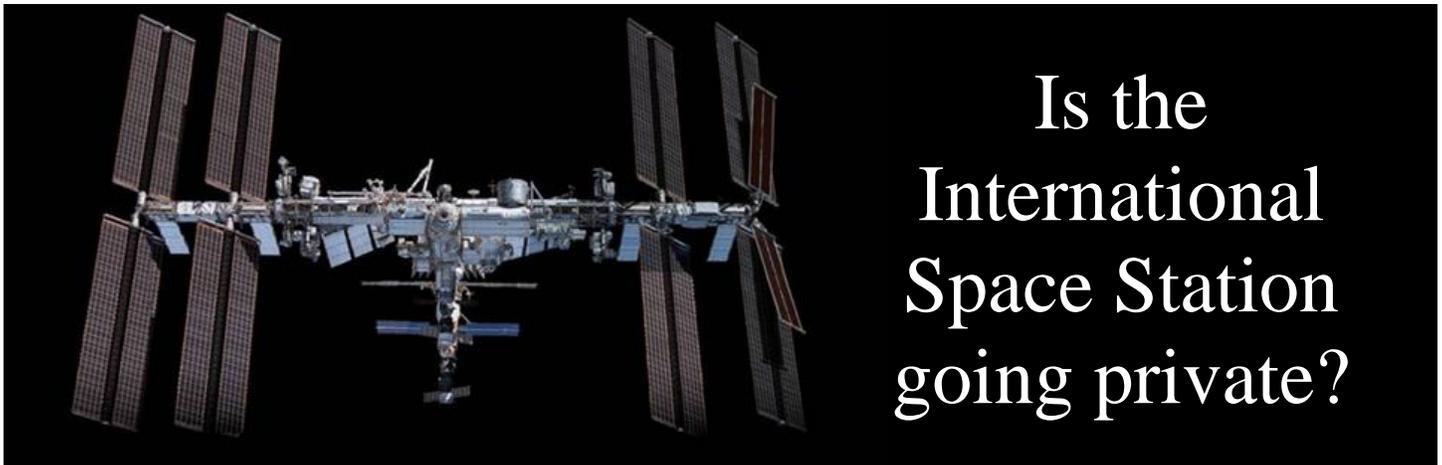
To add a Flair next to your username, PM Amy Northrop.

For Discord help, access **techsupport-faq**,  
or message Amy or Justin: <https://discord.gg/6N8r8DDj>

It also has voice channels so that you can speak to people through Discord.

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.

\*\*\*\*\*



**Yes, it looks like we ARE on our way to building a “public/private low-Earth Orbit Economy”!**

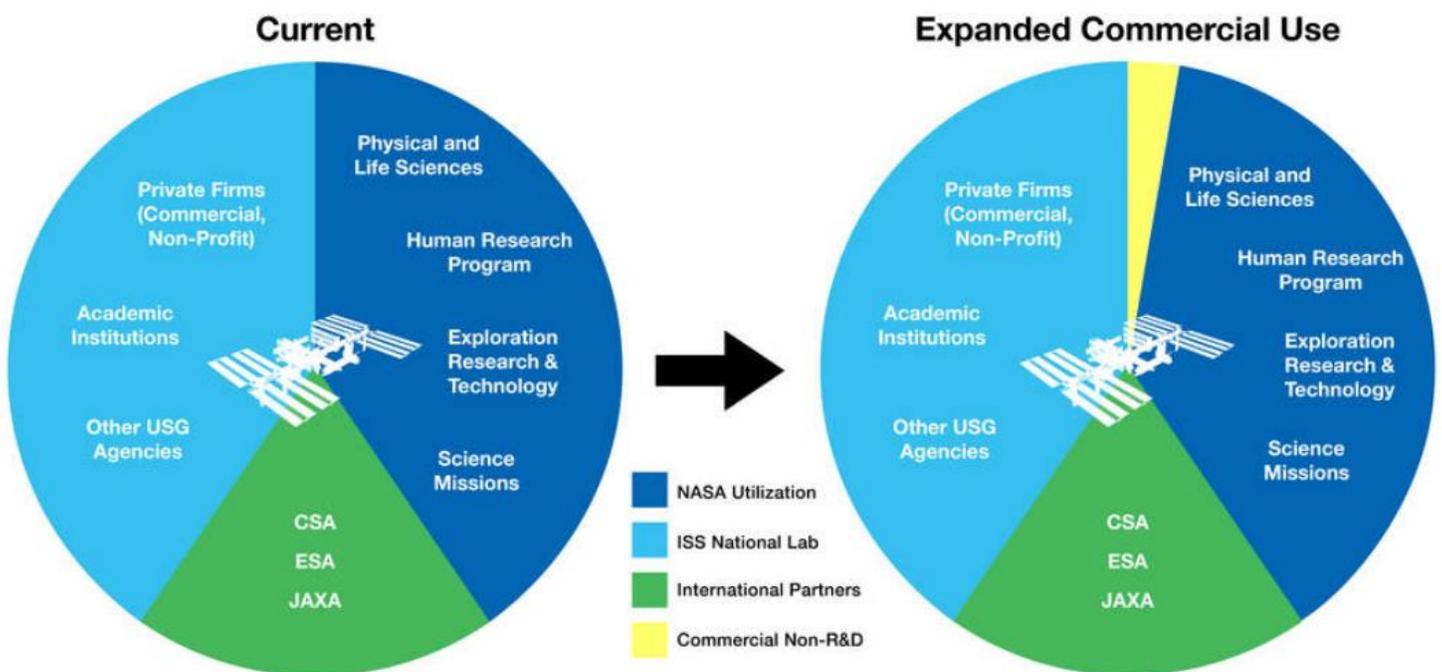
**edt for the AXIOM-1 LAUNCH:**

**Wednesday, March 30, Kennedy Space Center**

**Private companies will have access to the space station. Read about it here:**

**[Low-Earth Orbit Economy | NASA](#)**

Of course, it will take awhile to grow it. Here’s a chart that tells the tale:





# Messages from HRPO

Highland Road Park Observatory



## FRIDAY NIGHT LECTURE SERIES

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

**4 March: “Amateur Astrophotography”** BREC Program Aide Judah Santiago’s celestial images are going on display at HRPO. He will explain the checklist one should use to acquire equipment and skills to increase the beauty and detail of your [night sky photos](#).

**18 March: “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!

**25 March: “The X-Planes”** From Yeager’s awesome flights in the 1940s, through unmanned combat vehicles, to the current search for supersonic flight with the booms, this series of experimental crafts is the stuff of legend—but they’re real.

From Yeager’s awesome flights in the 1940s, through unmanned combat vehicles, to the current search for supersonic flight with the booms, this series of experimental crafts is the stuff of legend—but they’re real.



## EVENING SKY VIEWING

No admission fee. For all ages.

**Friday (4, 11, 18 and 25 February) from 8:30pm to 10pm**

**Saturdays (5, 19 and 26 February) from 7:30pm to 10pm**

HRPO houses a 50-cm reflector, a 40-cm reflector and several smaller telescopes to bring the majesty of the night sky to the public. Trained operators, sharing duties via a rotating roster, work throughout the year in shifts. Each operator has a pre-planned list of objects to highlight. However, requests will be taken if there is time and if all present have viewed the previous target.



## SCIENCE ACADEMY

Saturdays from 10am to 12pm

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

**5 March = “Computer Anatomy”** The second of SA’s three-session series will see Cadets learning the basic components of the machines that have changed our lives.

**12 March = “Computer Language”** Cadets spend the last session of this three-part series reading between the lines of the different “words and phrases” that run in the background of every valuable computer!

**26 March = “Soaring on the Space Shuttle II”** Cadets have heard the tales of the launch system that brought satellites and experiments into orbit. This is the second in a long series of sessions bringing that glorious time alive, with never-before-seen activities.



## THE EDGE OF NIGHT (Winter Session)

Friday 11 March from 5:45pm to 7:45pm / No admission fee.

For all ages. / Binocular strongly recommended.

It’s not light, it’s not dark. It’s that special time called twilight, and HRPO wants to introduce you to it! Are all sections of the sky the same shade of blue? Which stars are seen first? Are Mercury and Venus or the Moon out? Is that moving object a plane, a satellite or space debris? How much actual darkness should I expect in a light-polluted city when twilight has passed? There is no other time like twilight. Bring it into your life!



## PLUS NIGHT: “Pi in the Sky”

Saturday 12 March from 7pm to 10pm

For all ages. No admission fee. Binocular recommended.

During Plus Nights and extra features are available to the public...

\*The well-known marshmallow roast takes place at the campfire ring (weather-dependent).

\*Six to eight of HRPO’s collection of over fifty physical science demonstrations will be on hand to perplex and amaze. Which demos will it be?

\*An unaided eye sky tour takes place, showing the public major features of the sky for that month.

\*Filters are inserted into the viewing mechanisms, to show patrons “hidden” details of the Moon, Mars and Jupiter (when they are available).

\*Reveal your age, and be shown any “birth stars” in the sky at that time.



### SOLAR VIEWING

Saturday 19 March 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: "Computer Coding"

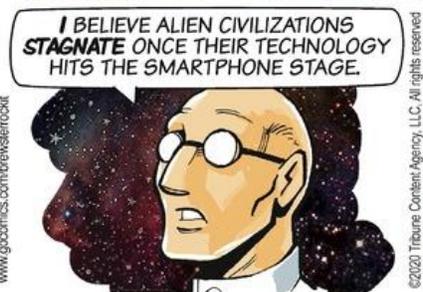
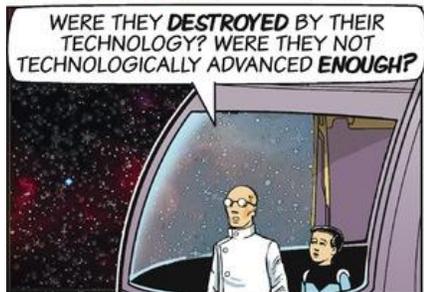
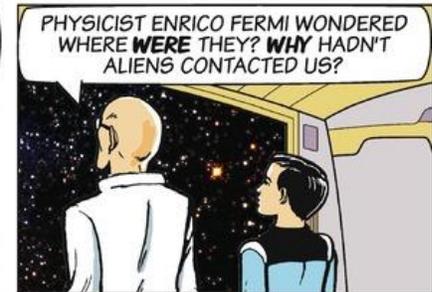
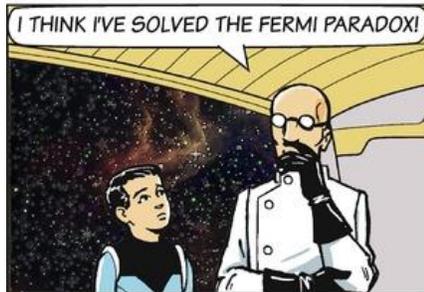
Saturday 19 March from 3:30pm to 7:30pm.  
For ages twelve to sixteen. \$15/\$18 per kid.

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.

\*\*\*\*\*

#### BREWSTER ROCKIT: SPACE GUY!

BY TIM RICKARD



02/23  
brewrockit@yelloo.com  
www.gocomics.com/brewsterrockit

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## **OBSERVING NOTES** **MARCH**

### **Ursa Minor – The Little Bear**

**Position: RA 15, Dec.+75°**

*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. This is the last of the updating of the Observing Notes. In the future, only new information will be updated, but the Sky Happenings calendar and associated information are new each month.*

### ***Named Stars***

**Polaris** (Alpha UMi), **North Star**, mag. 1.97, 02 31 47.08 +89 19 50.9, is a multiple star system. The primary star, A, is a yellow supergiant Cepheid variable star and a spectroscopic binary star – a dwarf star. The companion stars: B – magnitude 8.2, 18.4” separation at PA 218°, is a main sequence star that is called **Polaris B**; C – magnitude 13.0, 17 au separation at PA 083°; and D – magnitude 12.0, at a separation of 2400 au at PA 172°. There are many names for this star. The early Greeks called it **Alpha Phoenix**. The many Arabic names are as follows: “**Al Kiblah**” – because it is the least distant from the pole; “**Al Jady**” – “**The Young He Goat**” -that has degenerated into “**Juddah**”; “**Al Kuṭb al Shamāliyy**” – “**The Northern Axle or Spindle**” from “**Alkuṭb**” – “**the Pin**”; “**Al Kāukab al Shamāliyy**” – “**The Star of the North**”; and “**Al Faṣṣ**” – “**the Hole**”. The Chinese called it “**Pihkeih**,” “**Ta Shin**,” and “**Tien Hwang Ta Ti**” - “**The Great Imperial Ruler of Heaven**.” The Anglo-Saxons called it “**Scip**” or “**Stearra**” – “**The Ship Star**.” **Polaris** is also called the **Pivot Star**, **Lode Star**, **Alruccabah**, **Cynosura** – dog’s tail, **Star of Arcady**, **Yilduz**, **Mismar**, **Polyamaya**, **Dhruva**, **Tramontana**, **Angel Stern**, and **Stella Polaris**. Also known as **HD 8890**, **HIP 11767**, **Σ 93**, **ADS 1477**, and **1 Ursae Minoris**.

**Kochab** (Beta Umi), from the Arabic “**Nä’ir al Farkadäin**” and **Anwär al Farkadäin** – “**The Bright One**” and “**The Lights of the Two Calves**,” mag. 2.07, 14 50 42.4 +74 09 19.7, is an orange giant star with a magnitude 11.3 companion at a separation of 209.1” at PA 342°. **Kochab** has one planet in orbit with a period of 522 days. The Chinese call this star “**Ti**,” “**The Emperor**.” About 3000 years ago, **Kochab** was the closest bright star to the **True Pole**. Also known as **HD 131873**, **HIP 72607**, and **7 Ursae Minoris**.

**Pherkad** (Gamma<sup>1</sup> Umi), from the Arabic “**Alifä al Farkadäin**” – “**The Dim One of the Two Calves**,” “**Pherkad Major**,” mag. 3.04, 15 20 43.75 +71 50 02.3, is an intermediate luminosity supergiant star that rotates very fast – at an estimated speed of 180 km/sec. It is a shell star. The Chinese call it “**Ta Tsze**” – “**The Crown Prince**.” Also known as **HD 137422**, **HIP 75097**, **ADS 10242**, and **13 Ursae Minoris**.

**Pherkad Minor** (11 Umi), also called **Gamma<sup>2</sup> Ursae Minoris**, mag. 5.02, 15 17 05.88 +71 49 26.0, is part of a wide pair with **Gamma<sup>1</sup> Ursae Minoris** that is 17’ due east. There is one planet in orbit. Also known as **HD 136726**, and **HIP 74793**.

**Yildun** (Delta Umi), from the Turkish “**Yildiz**” – “**Star**,” mag. 4.35, 17 32 12.9 +86 35 10.8, is a white main sequence dwarf star. This star is also called **Gildun**, **Vildiur**, **Yilduz Pherkad**, and from the Arabic “**Alifä al Farkadäin**” in some lists, and the Chinese “**Know Chin**.” Also known as **HD 166205**, **HIP 85822**, and **23 Ursae Minoris**.

**Urodelus (Epsilon UMi), “The Conspicuous Tail,”** mag. 4.21, 16 45 58.16 +82 02 14.1, is a triple star system. The primary is a yellow giant star, an eclipsing binary star, and a spectroscopic binary star with a separation of 0.36 au. The third star is an orange main sequence star at magnitude 11.0 at a separation of 76.9” at PA 003°. Also known as **HD 153751, HIP 82080, ADS 10242, and 22 Ursae Minoris.**

**Alifā al Farkadāin (Zeta UMi), “The Dimmer One of the Two Calves,”** mag. 4.29, 15 44 03.46 +77 47 40.2, is a white main sequence dwarf star on its way to becoming a giant star. Also known as **HD 142105, HIP 77055, and 16 Ursae Minoris.**

**Anwār al Farkadāin (Eta UMi), sometimes it is called this, also called Alasco,** mag. 4.95, 16 17 30.5 +75 45 16.9, is a yellow-white main sequence dwarf star. Also known as **HD 148048, HIP 79822, and 21 Ursae Minoris.**

**Baekdu (8 UMi),** mag. 6.83, 14 56 48.32 +74 54 03.3, has one planet in orbit. Also known as **HD 133086, and HIP 73136.**

**Calvera,** 14 12 56 +7922 04, is a pulsar star and an isolated neutron star. It is also an X-ray source – **1RXS J141256.0 +792204.**

## *Deep Sky:*

There is no object above magnitude 10 in Ursa Minor. Three objects of interest are as follows: **NGC 3172, “Polarissima Borealis,”** mag. 14.8, 11 47 12 +89 06, 1.0’x0.7’ in size, is the closest object to the **North Celestial Pole.** Also known as **PGC 36847, MCG+15-01-011, CGCG (C) 370-002, C370-018, and ZwG 370-002.**

**UGC 9749, Ursa Minor Dwarf Galaxy, Ursa Minor Dwarf Spherical Galaxy (UMiDSG),** mag. 15.27, 15 09 11 +67 12 46, 0.6’x0.3’ in size. Also known as **DDO 199, PGC 54074, KIG 663, C 318-018, and C 319-001.**

**C 1440+697, Ursa Major Moving Cluster,** located in Ursa Minor at 14 40 54 +69 34. Also known as **Cr 285, Lund 684, and OCL 252.**

Deep Sky objects in Ursa Minor: **40 NGC; 20 IC; 84 UGC; 69 MCG; 102 CGCG; 3 Radio Galaxies; 1 Quasar galaxy; 11 NPM1G; 6 VII Zw; 3 ZwG; 1 HCG; 1 Arp; 1 Cr; 61 PGC; 27 Herschel; 21 IRAS; 1 Shk; 2 Mrk; 1 VV; 1 KTG; 1 KPG; 7 Kaz; 2 KARA; 3 KIG; 1 KUG; 2 ARAK; 3 AGC; 1 OCL; 1 Lund; 1 DDO; 1 Hrr; 1 Void; 1 Dwarf Spherical Galaxy; 1 Moving Cluster; 1 Gamma Ray Source; and 1 SDSS for a total of 484 objects.**

## *Other Stars:*

**HD 118904,** mag. 5.50, 13 37 11.05 +71 14 32.2, has one planet in orbit. Also known as **HIP 66435.**

**HD 158996,** mag. 5.74, 17 19 37.05 +80 08 11.0, has one planet in orbit. Also known as **HIP 84769.**

**HD 120084,** mag. 5.91, 13 42 39.38 +78 03 51.6, is a yellow giant star with one planet in orbit. Also known as **HIP 66903.**

**HD 150706,** mag. 7.03, 16 31 17.59 +79 47 23.2, has one unconfirmed planet in orbit. Also known as **HIP 80902.**

**Stars of interest beyond magnitude 10:**

**WD 1337+705,** mag. 12.77, 13 38 50.48 +70 17 07.7, is a white dwarf star with magnesium and silicon in its atmosphere. Also known as **HIP 66578.**

**H1504+65,** mag. 15.9, 15 02 09.62 +66 12 18.6, is a possible pre-white dwarf star.

**WISE 1506+7027,** 15 06 49.89 +70 27 36.2, is a brown dwarf star.

**Asterisms in Ursa Minor:**

**Little Dipper,** is formed by the seven brightest stars in the constellation – **Polaris (Alpha UMi), Yildum (Delta UMi), Urodelus (Epsilon UMi), Anwār al Farkadāin (Eta UMi), Akhf al Farkadāin (Zeta UMi), Pherkad (Gamma UMi), and Kochab (Beta UMi).** **Polaris, the North Star,** is at the end of the “**Dipper’s Handle.**” The four stars constituting the “**bowl**” of the **Little Dipper** are unusual in that they are of 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> magnitudes – **Eta, Zeta, Gamma, and Beta Ursae**

Minoris.

Tow Kwei, Chinese for “the bowl,” Eta, Zeta, gamma, and Beta Ursae Minoris.

Banät al Na’ash al Sughid, “The Daughters of the Lesser Bear,” consists of the three stars of the tail – Alpha, Delta, and Epsilon Ursae Minoris.

Nautaitut, “Never Moving” from the Inuit – Polaris, Kochab, and Pherkad.

Gouchén, “Curved Array” from the Chinese – Alpha, Delta, Epsilon, Zeta, Eta, Theta, and Lambda Ursae Minoris.

Beiji, from the Chinese for “The North Pole” – consisting of Beta and Gamma Ursae Minoris.

The Guards, The Guardians of the Pole, The Two Calves, The Two Young Ibexes – Beta and Gamma Ursae Minoris.

The Circlers, Leapers, dancers, Circitores, Saltators, Ludentes, Ludrones – consisting of Alpha, Beta, Gamma<sup>1</sup>, Gamma<sup>2</sup>, Delta, and Epsilon Ursae Minoris.

The First and Second Dancer – Delta and Epsilon Ursae Minoris.

Mini Coathanger, mag. 8.0, 16 29 00 +80 13, 15’ in size.

Engagement Ring, 3.5’ diameter of a circlet of 7<sup>th</sup> and 8<sup>th</sup> magnitude stars just south of Polaris.

Stars in Ursae Major: 17 Greek; 11 ADS; 24 Numbered; 7 HD; 24 Lettered; 1 Mir; 1 HV; 1 Ku; 1 A; 1 h; 2 Hu; 17 Σ; 3 OΣ; 1 OΣΣ; 1 β; 1 Pulsar; 2 White Dwarf; and 1 Brown Dwarf for a total of 116.

## Sky Happenings: March 2022

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

- Mar. 2<sup>nd</sup> - Dawn: There are 4 planets along the southeast horizon – **Venus** and **Mars** are separated by about 5°, and guard **Mercury** and **Saturn** that are 1° apart, **Mercury** passes 0.1° south of **Saturn** at 7 AM CST, **New Moon** occurs at 11:35 AM CST.
- Mar. 5<sup>th</sup> - **Jupiter** is in conjunction with the **Sun** at 8 AM CST.
- Mar. 7<sup>th</sup> - **Uranus** is 0.8° north of the **Moon** at 12 Midnight, CST.
- Mar. 8<sup>th</sup> - Evening: The waxing crescent **Moon** is in **Taurus** between the **Hyades** and the **Pleiades**.
- Mar. 9<sup>th</sup> - The **Moon** passes 0.3° south of the dwarf planet **Ceres** at 1 AM CST.
- Mar. 10<sup>th</sup> - **First Quarter Moon** occurs at 4:45 AM CST, The **Moon** is at apogee (251,200 miles or 404,268 km from **Earth**) at 5:04 PM CST.
- Mar. 12<sup>th</sup> - **Venus** passes 4° north of **Mars** at 8 AM CST, Evening: High in the south, the waxing gibbous **Moon**, in **Gemini**, is about 3° from **Pollux**.
- Mar. 13<sup>th</sup> - Daylight Savings Time starts at 2 AM CST, **Neptune** is in conjunction with the **Sun** at 7 AM CDT.
- Mar. 15<sup>th</sup> - Evening: The **Moon**, in the southeast, is 4° to the upper left of **Regulus**.
- Mar. 18<sup>th</sup> - **Full Moon** occurs at 2:18 AM CDT.
- Mar. 19<sup>th</sup> - Evening: The gibbous **Moon** rises in tandem with **Spica** in the east-southeast with about 4° of separation.
- Mar. 20<sup>th</sup> - **Venus** is at greatest western elongation (47°) at 4 AM CDT, **Vernal Equinox** occurs at 10:33 AM CDT – **Spring** officially begins, **Mercury** is 1.3° south of **Jupiter** at 5 PM CDT.
- Mar. 23<sup>rd</sup> - Dawn: The waning gibbous **Moon**, in the south, is 2° above **Antares** before sunrise, The **Moon** is at perigee (229,758 miles or 369,760 km from **Earth**) at 6:37 PM CDT.
- Mar. 25<sup>th</sup> - **Last Quarter Moon** occurs at 12:37 AM CDT, Dawn: **Venus**, **Mars**, and **Saturn** rise in a compact triangle in the east-southeast.
- Mar. 27<sup>th</sup> - The **Moon** passes 4° south of **Mars** at 10 PM CDT.
- Mar. 28<sup>th</sup> - The **Moon** passes 7° south of **Venus** at 5 AM CDT, Dawn: The waning crescent **Moon** is below **Venus**, **Mars**, and **Saturn** as they rise in the east-southeast,

- The **Moon** passes 4° south of **Saturn** at 7 AM CDT.  
**Mar. 29<sup>th</sup>** - **Venus** passes 2° north of **Saturn** at 8 AM CDT.  
**Mar. 30<sup>th</sup>** - The **Moon** passes 4° south of **Jupiter** at 10 AM CDT,  
 The **Moon** passes 4° south of **Neptune** at 2 PM CDT.  
**April 1** - **New Moon** occurs at 1:24 AM CDT (Lunation 1228),  
**Mercury** is in superior conjunction at 7:23 PM CDT.  
**April 3<sup>rd</sup>** - **Uranus** is 0.6° north of the **Moon** at 12 Noon CDT.

## Planets:

**Mercury** – **Mercury** will remain visible in early March. On March 2<sup>nd</sup>, the planet will rise in the east with only 42" separation from **Saturn** (to the south) shortly before 6 AM local time. One-half hour before sunrise the pair is only 3° high. One-half hour after they rise, they are 6° high. **Mercury** will quickly descend deeper into the twilight and becomes harder to spot. On the 9<sup>th</sup>, the planet is only 2° high just 20 minutes before sunrise. Soon after the planet will disappear, continuing toward its April 1<sup>st</sup> superior conjunction. You will be able to see the planet again, at dusk, starting about April 11<sup>th</sup>.

**Venus** – **Venus** rises in the morning sky more than two hours before the **Sun** on March 1<sup>st</sup>, with **Mars** rising one-half hour later with 5° separating them in eastern **Sagittarius**. **Venus** is at magnitude -4.7, with **Mars** at magnitude 1.3. The two planets trek in tandem across **Sagittarius** reaching **Capricornus** on March 6<sup>th</sup>. On the 15<sup>th</sup>, the two planets are separated by 3.9°, and will remain within 5° of each other for the next 10 days. **Venus** will reach greatest western elongation (47°) on the 20<sup>th</sup>, with a 50% lit disk spanning 25". On March 24<sup>th</sup> and 25<sup>th</sup>, **Venus** is roughly equidistant (4° to 5°) from **Mars** and **Saturn**, with the planets forming a triangle 8.5° high an hour before sunrise. On the 28<sup>th</sup>, a 20-day old crescent **Moon** will be less than 6° below **Mars**, with **Saturn** and **Venus** 2.2° apart 6° north of the **Moon**. **Venus** will be a 54% lit disk spanning 23". On the 31<sup>st</sup>, **Venus** and **Mars** are 6° apart with **Saturn** between them.

**Mars** – **Mars** rises about 1.5 hours before the **Sun** on March 1<sup>st</sup> in eastern **Sagittarius** about 5° from **Venus**. **Mars** is at magnitude 1.3. The two planets travel in tandem, entering **Capricornus** on the 6<sup>th</sup>. Their closest approach, 3.9° apart, will occur on the 15<sup>th</sup>, with **Mars** at magnitude 1.2. On the 25<sup>th</sup>, **Mars**, **Venus**, and **Saturn** will form a triangle in the morning sky. On the 28<sup>th</sup>, the **Moon** joins the triangle of planets in the morning sky.

**Jupiter** – **Jupiter**, in conjunction with the **Sun** on March 5<sup>th</sup>, will reappear briefly in the morning sky at the end of the month. The planet, at magnitude -2.0, will stand just 2° high in the eastern sky 30 minutes before dawn.

**Saturn** – **Saturn**, along with **Mercury**, starts the month with a tight conjunction (less than 1° apart) as they rise in the east-southeast. One-half hour before sunrise they will be only about 3° above the horizon. On the 25<sup>th</sup>, **Venus**, **Mars**, and **Saturn** are in a triangle in the morning sky. On the 28<sup>th</sup>, the three planets – still in a triangle form – are joined by the waning crescent **Moon**, below the planetary trio.

**Uranus** – **Uranus**, at 6<sup>th</sup> magnitude, is the only planet visible in the evening sky in a dim region of **Aries**. It will stand due north of the circle of stars depicting the head of **Cetus**. **Uranus** starts the month 44' southeast of the star **29 Arietis**. On the 6<sup>th</sup>, the planet will be 3° to 4° northeast of the **Moon**. From the 14<sup>th</sup> to the 23<sup>rd</sup>, the planet will stand within 18' of a 7<sup>th</sup> magnitude red giant field star, with **Omicron Arietis** just over 1° to the east. For the rest of the month, the planet heads toward **Omicron Arietis**, ending the month only 0.8° due west of the star. The planet has a distinctive bluish-green disk which spans just over 3".

**Neptune** – **Neptune** reaches conjunction with the **Sun** on March 13<sup>th</sup>. The planet is not visible this month.

**Pluto** – **Pluto** will be at the following co-ordinates on March 15<sup>th</sup>: 20 01 06 -22 25. **Pluto**, in **Sagittarius**, is at magnitude 15.2 and has a span of 0.1.'

**Sun** – **Vernal Equinox** – the official start of **Spring** occurs at 10:33 AM CDT on March 20<sup>th</sup>.

**Moon** – Favorable librations: **Beals Crater** on March 5<sup>th</sup>; **Neper Crater** on the 8<sup>th</sup>; **Guthnick Crater** on the 18<sup>th</sup>; and **Pascal Crater** on the 24<sup>th</sup>.

Greatest North Declination – on the 12<sup>th</sup> (26.7°)

South Declination – on the 25<sup>th</sup> (-26.6°)

Libration In Longitude:

Eastern Limb Most Exposed on the 5<sup>th</sup> (+5.5°)

Western Limb Most Exposed on the 17<sup>th</sup> (-5.2°)

Libration In Latitude:

North Limb Most Exposed on the 2<sup>nd</sup> (+6.5°) and on the 29<sup>th</sup> (+6.6°)

South Limb Most Exposed on the 16<sup>th</sup> (-6.6°)

**Asteroids / Minor Planets** Asteroid **1 Ceres** – Ceres positions, according to the *RASC Observer's Handbook, 2022 USA Edition*, are as follows: On March 2<sup>nd</sup> – 04 07.13 +21 56.7, at magnitude 8.6 in **Taurus**; on the 12<sup>th</sup> – 04 18.26 +22 46.8, at magnitude 8.7 in **Taurus**; and on the 22<sup>nd</sup> – 04 30.92 +23 35.2, at magnitude 8.8 in **Taurus**. Ceres positions, by my estimates, are as follows: On March 1<sup>st</sup> – about 0.6° east of the star **37 Tauri**; on the 5<sup>th</sup> – about 1.6° east and a touch north of **37 Tauri**; on the 10<sup>th</sup> – about 3° east and a little north of **37 Tauri**, or 2° north of **Omega Tauri**; on the 15<sup>th</sup> – about 1° north-northwest of **Kappa Tauri**; on the 20<sup>th</sup> – about 0.8° northeast of **Upsilon Tauri**; on the 25<sup>th</sup> – about 1.7° northwest of **Tau Tauri**; and on the 30<sup>th</sup> – about 1.4° north and a touch east of **Tau Tauri**.

Asteroid **7 Iris** – Iris's positions, according to the *RASC Observer's Handbook, 2022 USA Edition*, are as follows: On March 2<sup>nd</sup> – 07 11.15 +16 08.4, at magnitude 9.1 in **Gemini**; on the 12<sup>th</sup> – 07 15.01 +16 11.5, at magnitude 9.4 in **Gemini**; and on the 22<sup>nd</sup> – 07 21.64 +16 09.9, at magnitude 9.4 in **Gemini**.

Asteroid **10 Hygiea** – Hygiea's position, by my estimate, is about 14 42 -20 48 in **Libra**.

Asteroid **20 Massalia** – Massalia's positions, according to the *RASC Observer's Handbook, 2022 USA Edition*, are as follows: On March 2<sup>nd</sup> – 08 52.78 +16 24.3, at magnitude 9.2 in **Cancer**; on the 12<sup>th</sup> – 08 49.14 +16 44.8, at magnitude 9.5 in **Cancer**; and on the 22<sup>nd</sup> – 08 48.91 +16 51.7, at magnitude 9.8 in **Cancer**.

**Comets** – Comet **19P/Borrelly** - Borrelly's positions, by my estimates, are as follows: On March 1<sup>st</sup> – about 2° northwest of **Nu Arietis**; on the 5<sup>th</sup> – about 4.3° north and a touch west of **Epsilon Arietis**, or about 2.4° southeast of **41 Arietis**; on the 10<sup>th</sup> – 5.2° east of **41 Arietis**, or about 4.5° northwest of **64 Arietis**; on the 15<sup>th</sup> – about 4.3° southwest of **Omicron Persei**, or about 6.2° north and a touch east of **64 Arietis**; on the 20<sup>th</sup> – less than 0.5° north of **Omicron Persei**; on the 25<sup>th</sup> – 1.3° southwest of **Xi Persei**, or about 2.5° northeast of **Zeta Persei**; and on the 30<sup>th</sup> – about 5° east and a little south of **Xi Persei**, or about 4° east of **NGC 1499**.

Comet **104P/Kowal** and Comet **C/2019 L3 (ATLAS)** – both are between **M35** and the **Rosette Nebula (NGC 2237)** near the **Gemini-Orion-Monoceros** border.

Comet **67P/Churyumov-Gerasimenko** is in **Cancer**.

Comet **C/2017 K2 (PANSTARRS)** is in **Aquila**.

**Meteor Showers** – There are no **Major (Class I) Meteor Showers** active in March. There are no **Minor (Class II) Meteor Showers** active in March. There are no **Variable (Class III) Meteor Showers** active in March. There are 5 **Weak (Class IV) Meteor Showers** (<2 maximum zenith hourly rate) active in March: The **Xi Herculids**, active from March 6<sup>th</sup> through March 20<sup>th</sup>, peaks on March 12<sup>th</sup>; the **Delta Mensids**, active from March 2<sup>nd</sup> through March 26<sup>th</sup>, peaks on March 12<sup>th</sup>; the **Beta Taurids**, active from March 2<sup>nd</sup> through March 26<sup>th</sup>, peaks on March 13<sup>th</sup>; the **Delta Pavonids**, active from March 11<sup>th</sup> through April 16<sup>th</sup>, peaks on March 31<sup>st</sup>; and the **April Epsilon Delphinids**, active from March 31<sup>st</sup> through April 20<sup>th</sup>, peaks on April 9<sup>th</sup>.

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

#### Evening Sky

Uranus (west)

#### Midnight

#### Morning Sky

Mercury (east)

Venus (southeast)

Mars (southeast)

Jupiter (east)

Saturn (east)

# Mythology:

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## Ursa Minor – The Little Bear

The Little Bear was said by the Greeks to have been first named by the astronomer Thales of Miletus, who lived from about 625 BC to 545 BC. The earliest reference seems to have been made by the poet Callimachus of the third century BC, who reported that Thales ‘measured out the little stars of the Wain by which the Phoenicians sail.’ Certainly Homer, two centuries before Thales, wrote only of the Great Bear, never mentioning the Little Bear. However, it is not clear whether Thales actually invented the constellation or merely introduced it to the Greeks, for Thales was reputedly descended from a Phoenician family and, as Callimachus said, the Phoenicians navigated by reference to Ursa Minor rather than Ursa Major. Aratus points out that although the Little Bear is smaller and fainter than the Great Bear, it lies closer to the pole and hence provides a better guide to the north. We have the word of Eratosthenes that the Greeks also knew Ursa Minor as the Phoenician.

Aratus called the constellation Cynosura, Greek for ‘dog’s tail.’ This is the origin for the English word cynosure, meaning ‘guiding star.’ According to Aratus the Little Bear represents one of the two nymphs who nursed the infant Zeus in the cave of Dicte on Crete.

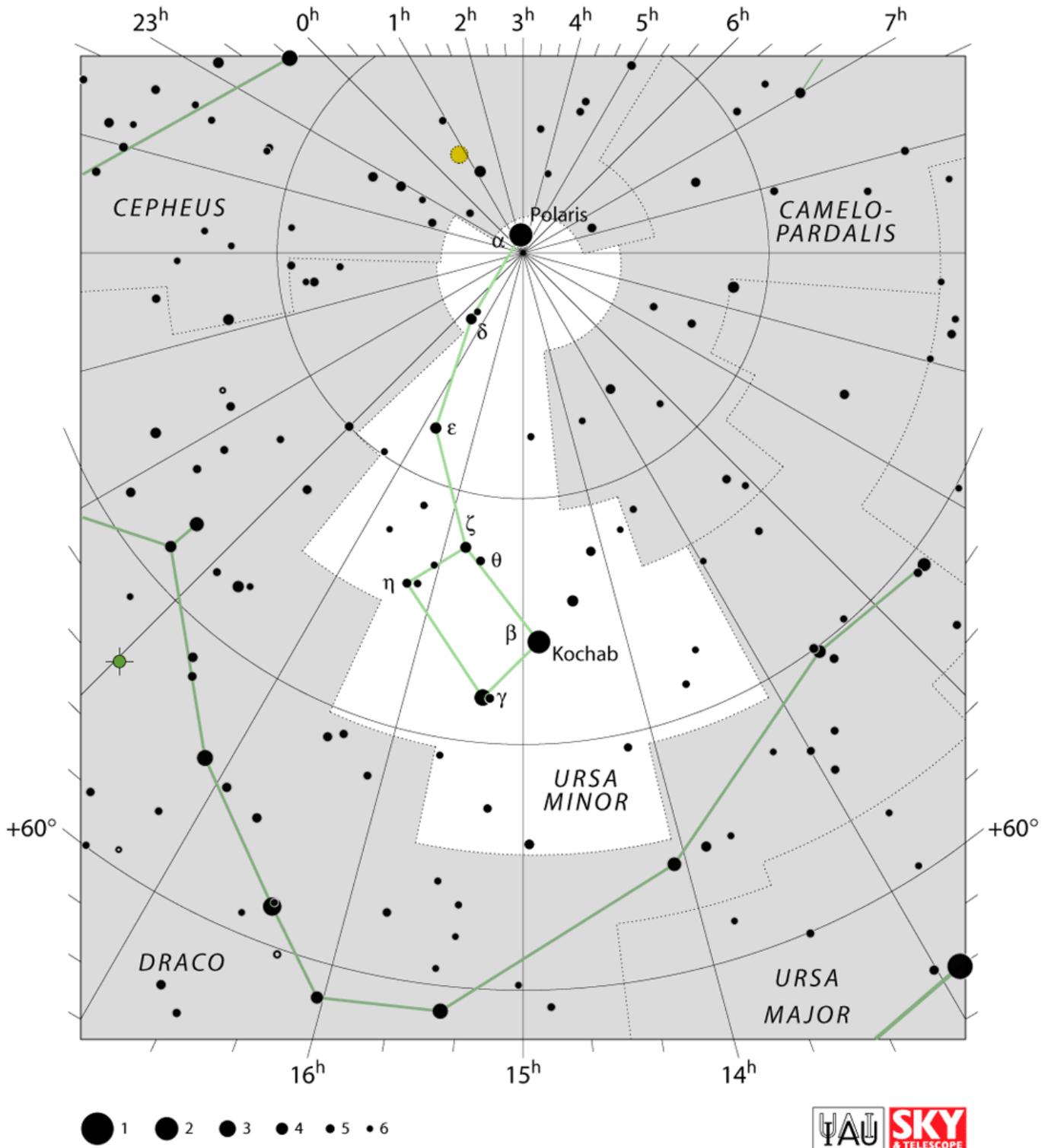
Apollodorus tells us that the nurses names were Adrasteia and Ida. Ursa Minor commemorates Ida while Adrasteia, the senior of the two, is Ursa Major.

Ursa Minor has a similar ladle shape to Ursa Major, and so it is popularly termed the Little Dipper. At the end of the Little Bear’s tail (or the Little Dipper’s handle) is the star Alpha Ursae Minoris, commonly known by the Latin name Polaris, because it is the north pole star. Contrary to popular belief, the north pole star is not particularly bright. Polaris is a second magnitude star, lying about a degree away from the exact north celestial pole, close enough to make it an excellent guide star for navigators.

The second star in the Little Bear’s tail, Delta Ursae Minoris, is called Yildun, a misspelling of the Turkish word yildiz, meaning ‘star.’ According to the German star name authority Paul Kunitzsch, this was wrongly thought to be a Turkish name for the pole star in Renaissance times, and it has since been arbitrarily applied to the star nearest the true pole star.

Two stars in the bowl of the Little Dipper, Beta and Gamma Ursae Minoris, are sometimes referred to as the guardians of the pole. Their names are Kolchab and Pherkad. Paul Kunitzsch has been unable to trace the origin of Kolchab, but thinks it may come from the Arabic Kaukab, meaning ‘star.’ Pherkad is from the Arabic word meaning ‘the two calves.’ Referring to both Beta and Gamma Ursae Minoris.





The End