

Night Visions

May 2023

Newsletter of the Baton Rouge Astronomical Society

JUICE launched from Europe's Spaceport in Kourou, French Guiana on 14 April 2023.. See Page 10 for details.

Monthly Meeting May 8th at 7:00 PM, in person

You may also join this meeting via meet.jit.si/BRASMeet

(Monthly meetings are held on 2nd Mondays of the month, at Highland Road Park Observatory)

PRESENTATION: LSU Instructor Colin Turley, a regular volunteer at HRPO, will be speaking on interesting ways to die in space.

What's In This Issue?



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



[Article: Juice Launches](#)

HRPO EVENTS

OBSERVING NOTES: Centaurus – The Centaur

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

Summer, and ALCon 2023, is almost here. The outreach at LASM for their Astronomy Day was a success. BRAS members made a few contacts and the ALCon Thursday night event at the planetarium was discussed (see below).

The Sidewalk Astronomy at Perkins Rowe, the next to the last for this season, was a success also. About 75 people stopped by to look through the telescopes set up by Scott C., Coy W., and myself

ALConvention Progress Report and Schedule of speakers/panelists.

The ALCon 2023 Committee(s) are working hard finalizing details. The registration is now online, or the mail-in registration form is also available – a link is on the BRAS website.

Most of the seats for the **LIGO trip** are now taken – we ask that no local people sign up for this tour – we can take the tour on LIGO's public Saturday (once a month).

The “**Meet and Greet**” for Wednesday night will be at **LSU – Nicholson Hall**. There will be a few talks, a **tour of the Landolt Observatory** – LSU hopes to have the refurbishment of the 11.5-inch Alvan Clarke refractor completed by then – and a few snacks/drinks will be available. There will also be a **tour of the “Mounds” at LSU** (a short walk away) – these mounds have been carbon dated to be 11,300 years old, the oldest human artifact in the Americas (both North and South)– with a short talk by one of the authors of the research papers on their history and purpose.

Thursday morning will be talks by **Pranvera Hyseni, David Levi, Brother Guy -the Vatican Astronomer, Dr. James Dire**, and not yet confirmed **Jerry Hubble** – ALPO's Exo-planet section head.

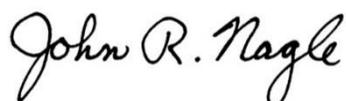
Thursday night will be the event at **LASM planetarium**, with **Fred Espenak's talk**. The subject of the show has not yet been decided.

Friday events will be a talk by **Robert Reeves on Lunar Photography**, a panel on **Light Pollution**, the AL meeting, the **AL President's Panel**, and a talk from **Bob Morrow** of Bob's Knobs on Collimation. Friday night is the **Star-B-Q at HRPO** (with Gumbo and Jambalaya in keeping with the theme of “Astronomical Gumbo”). There will be a few remarks by all three partners of the Observatory – LSU, BREC, BRAS.

Saturday will be the **AL Youth Award Presentation**, a panel on “**Being a Science Communicator**”, a panel on **Youth in Astronomy**, and a short promo for the 2024 ALCon. In the evening will be the “**Main Event**” – **the Banquet** with keynote speaker **David Eicher** – Editor of Astronomy Magazine – with his talk on Galaxies.

All in all, ALCon 2023 looks like it will be a fantastic time for all of us. By AL rules, 15% of our club membership is required to attend– so PLEASE support your club, go and register, AND don't miss this great international event being brought right to your back yard!

Clear Skies and have a safe Memorial Day!



Calendar of Upcoming Meetings

Monthly Member Meeting – 7 pm Monday, May 8th at the Observatory, in person and via Jitsi

Light Pollution Committee: 6 p.m. before the Monthly meeting.

Monthly Business Meeting: 7 pm Wednesday, May 31st (last Wednesday of the month - Members Only), at the Observatory, in person and via Jitsi

MOON (Members Only Observing Night) TBA

ALCon 2023 (“Astronomical Gumbo”) Committee Meeting
Two meetings: TBA, online.



Monthly Meeting Minutes – April 10th

- Welcome by the president, John Nagle.
- John introduced our presenter, Erik Borowski, a PhD student from the Department of Physics and Astronomy at LSU, speaking on “How YOU Can Participate in Science with Variable Stars and the AAVSO”.—with an overview of the different types of variable stars (“extrinsic” and “intrinsic”), and how they help us to find exoplanets, build up distance ladders).
- John announced books for the raffle. Ben added pins from the Night Sky Network. John also announced that Brad Schaefer was referenced in an article (“Fireworks Fly From Supernova”) in the May issue of Astronomy on p. 10. Brad was one of the two astronomers researching the filaments of emission of the planetary nebula Pa 30. There was an 8-inch telescope in the front of the room that was donated and is looking for a home. John also had pulled some photographs that Wally had taken during his lifetime; these John left on the front table for members to go through and keep whichever ones they wanted to keep. A gentleman (John Tucker?) needs to downsize his telescope collection. He has a 10-inch Orion and a 16-inch Meade that he wants to donate. We also have 3 or 4 telescopes in the BRAS closet that need to get adopted. Someone mentioned Big Blue. Some of these might be available for a library to adopt.
- Ben’s outreach schedule is covered elsewhere in the newsletter.
- Steven announced that ALCON 2023 had the registration screen up; this is at ALCON2023.org. The shop is live today also. This is due to all the hard work Steven and Scott C. have done. Fred Espanak, David Levy, David Eicher, Guy Consolmagno, and the young lady from Kosovo are scheduled to speak. There will be a barbeque with gumbo at the observatory on Friday night and an event at the Planetarium (Thursday evening?). Wednesday the event at LSU should include viewing through the newly refurbished 11.5-inch Clark refractor on campus.
- We went around the room and introduced ourselves so that the new people could put names to faces.
- A raffle was held with coffee and cookies available for onsite attendees.

Submitted by Roz Readinger, Secretary



2022 USA Forever Stamp

2023 Officers:

President: John Nagle

president@brastro.org

VP: Joel Tews

vice-president@brastro.org

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secretary@brastro.org

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Scott Cadwallader

webmaster@brastro.org

Open



Business Meeting Minutes – April 26th

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

1. **Goodwood Library Telescope** – This has been fixed and taken back to the library. We will need to check on it periodically for maintenance issues. Somewhere along the way the library obtained another telescope they are also using for check out.
2. **Laptop** – We have already voted as a club to purchase the laptop. John came back with two quotes from Tim of Tim's Computers; one was between \$600 and \$700 and the other was between \$800 and \$900. We are thinking to go with what Ben originally found which was between \$500 and \$600. John is going to forward Ben's information to Trey per Trey's request.
3. **Donated Telescopes** – Chris K. is compiling a chart of donated telescopes. He has just added a C8 to this chart. There was a suggestion to use the recently donated Trekker telescope for IAD on Saturday. John did some research on this one and discovered it was built in 1958 by Leland Barnes who was trained by Alvin Clark. The information that John researched and printed is located in his box in the BRAS closet for anyone to take a look at. John is trying to contact the gentleman that wants to donate two telescopes as well as the gentleman that lives close to where Forrest lived and wants to donate a telescope. Later a committee was proposed to handle donated telescopes. This was agreed to; Scott C. volunteered to serve on this committee.
4. **State of HRPO meeting between partners** – This meeting was originally scheduled for this afternoon, but no one responded to emails; therefore, this meeting was canceled. This will probably be rescheduled for the second or third week in May.
5. **State of HRPO for ALCON** – The issue with the drop-out cylinders is still outstanding. There was discussion about getting more help in the club and having a paper trail to talk to the partners about issues.

New Items

1. The soccer complex is currently shut down as BREC is trying to allow the grounds to recover for major soccer activity in the summer. There was a question about whether we were going to be able to use the facility for Venusian elongation coming up. Someone will be checking with BREC on this.
 2. John shared the picture that was taken of our group at the LASM event this past Saturday.
 3. Chris K. announced that he had the May schedule done for the observatory. He encouraged BRAS to adopt the STAN guidelines for ethics. He talked about putting more glass items in the Wormhole. He is also going to have the plexiglass at the front desk removed.
 4. Steven spoke briefly about ALCON2023. It was decided that the May dates for the meetings will be on the 4th and the 18th.
 5. Colin Turley is scheduled to be our speaker for the May meeting. We are now looking for speakers for the June and July meetings.
 6. There was some discussion about the BRAS website. John was going to talk to Mike Carambat and/or Joel's web expert friend, but we may need to move in another direction on this. Steven maintains that we need to be in charge of our domain management account and that Trey should control this.
 7. MOON Night is currently scheduled for Saturday, June 3rd, from around 9:00 pm to 12:00 or 1:00 am. And we were reminded that we can always stay for viewing after the BRAS meetings.
- Members attending this evening were John N., Scott C., Chris K., Steven T., Trey A., and Roz R.

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/BRAstro/>

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 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. ~ Amy Northrop

ASTRONOMICAL LEAGUE FACEBOOK PAGES, become a member, keep up with the news.

<https://www.facebook.com/Astronomical.League/>

ALCon 2023 in Baton Rouge, Louisiana

<https://www.facebook.com/alcon2023br>





Outreach Report for April 2023



Hi Everyone,

Another month and a bunch more Outreach events completed successfully! We made appearances at the Baton Rouge Zoo for **Zippity Zoo Fest**, **Westdale Heighs Academic Magnet**, the **Louisiana Art and Science Museum**, **Perkins Rowe** and the **Ascension Parish Library in Gonzales**. Once again, a huge thank you to those of you that volunteered to help out with the events. There is no way we could do so many without your support.

We are really getting some good activities going for these events, too, and they are very popular with the people. The Rabys with their excellent **scale distance model of the Solar System** are always a hit.

Coy has been wowing people with **live video feeds from his Hydrogen-Alpha scope**. (It's been especially great since the Sun has been so active!) Scott's various **3D printed models** are going over very well, too. Not only has he made some cool craters of the Moon, he's also got some mechanical models of the Sun-Earth-Moon orbits and a very cool sun dial.

Our **gravity well model** is pretty popular, too. A lot of parents are especially interested at how easily such high concepts can be explained and demonstrated. When they walk away smiling and talking with each other about what they just learned, I know we've done a good job.

Sorry that I keep forgetting to take pictures. Scattered herein are a few, but not enough to capture the excellent volunteer work done by our club member.

We've got a little lighter schedule for May as you'll see below, but after the busy March and April, we can use the down time. We'll go on hiatus from Sidewalk Astronomy at Perkins Rowe starting in June, but June will have 3 other Outreach events for us so take a look and let me know if you'd like to help out.

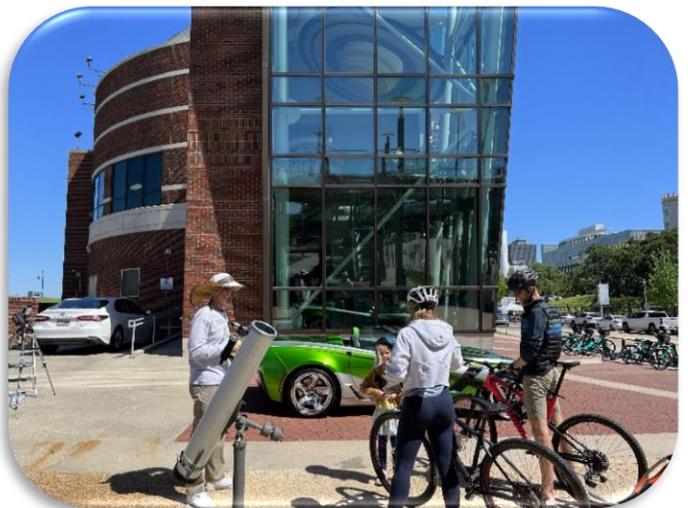
I hope to see you out at some events in the future. It really is the most fun way to learn more about the hobby we all love!

Clear Skies, Ben Toman

A handwritten signature in black ink, appearing to read 'Ben Toman', with a stylized flourish at the end.



Chris K. working the gravity well demo



Chris R. working his solar scope on the sidewalk at the La. Arts & Science Museum, downtown B.R.

Upcoming Events:

May 30th

7pm-9pm

Sidewalk Astronomy at Perkins Rowe

Final of the season

June 1st

10am-2pm

EBRPL Summer Reading Program Kickoff

Main Library at Goodwood

3 or more volunteers needed for demos and possible solar observing

June 8th

2pm-3pm

West Feliciana Library Summer Kid's Program

2 or more volunteers needed for various demos/activities for ages 12 and under.

June 29th

5pm-7:30pm

GraceLife Fellowship Family Night

2 or more volunteers needed for Sidewalk Astronomy type event (mostly Solar, obviously)



Busy day at LASM for Astronomy Day!



Coy with yet another of his cool toys (a nifty bino mount) at Perkins Rowe



*Most (not all) of our helping hands snagged for a pose at the LASM Astronomy Day event:
Top L to R. Steven Tilley, Annette Raby, John Nagle, Brandon Gravois, Abigail Gravois
Bottom L to R: Scott Cadwallader and Chris Raby*



LPC (Light Pollution Committee) Report (April)

This committee meets at 6:00, same day as the 7:00 BRAS Member Meeting
Everyone is welcome to join in.

1. Form Letter for new construction/development almost finished.
2. An E-mail will be sent to the Unified Development Code (UDC) Committee for clarification of a few points about Light Pollution.
3. Chris drafting letter to DOTD about complaints he has received.
4. You Tube scripts for Light Pollution are being written.
5. Awaiting list of North Baton Rouge Park contacts for outreach.
6. Chris is composing a list of Entergy contacts.

New Item

1. Chris has an IEEE contact for the next (May) meeting.

John Nagle, LPC Chair Pro-Tem

Globe At Night

The target for the Globe at Night program is Orion and Gemini from May 11th through May 20th.

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

<https://www.globeatnight.org>

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

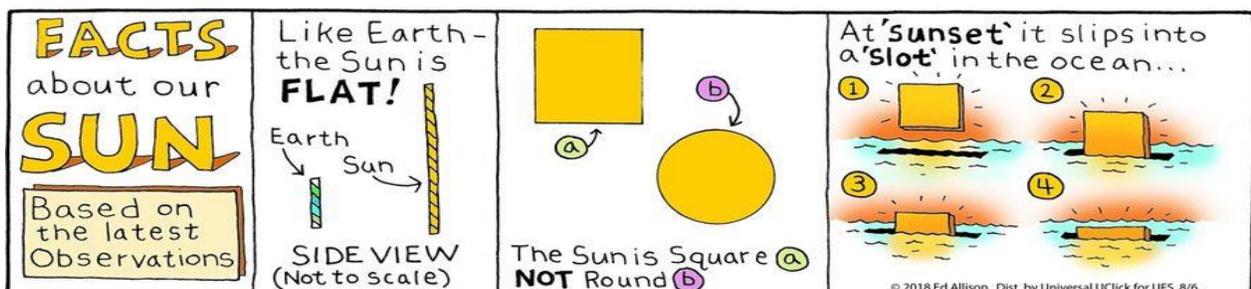
SPACE WEATHER ALERTS

Instant solar flare alerts: The sun is starting to flare again.

Sign up for [Space Weather Alerts](#) to receive text messages when explosions are underway.

Basic plan \$49.95/year

Alerts include: Coronal Mass Ejections (CME), Geomagnetic Storms Predicted (class G1-G4), Planetary K-index (K5-K9, K4 for Pro Plan), Solar Flare alerts (X-Ray Flux levels and Scales), Solar wind speed alerts (500, 600, 700 and over 800 km/s), B Sub Z South-pointing episodes, Cracks in Earth's magnetic field.



2023 Astronomical League Convention Update!

We now have our own ALCON Web Page. Check it out. Bookmark and watch it grow.
<https://alcon2023.org/>

HELP! We Need More Sponsors!!!

From now on, we will be doing planning and work by way of subcommittees, making use of small group meetings, e-mail, phone, etc, without the need to have the full committee meeting. We have a lot to get done. If you like to help, please EMAIL Steven M. Tilley smtilley@alcon2023.org

We are looking for Sponsors, please check with the ALCon 2023 committee before, so we do not re-ask anyone.

The 2023 ALCON Sponsorship Levels

Level	Price	Benefits
Galaxy	Above \$5000	Same as "Solar System" plus a 10-minute presentation[time slots are limited] during the conference.
Solar System	\$2000 to \$5000	Same as "Star" plus a large logo displayed on all conference signs and all slides used in the conference room between speakers. One full page for sponsor information in the Convention Program.
Star	\$1000 to \$1999	Same as "Planet" plus small Logo displayed on all conference signs and on schedule display. 1/4 page in Conference Program for logo and sponsor information
Planet	\$500 to \$999	Same as "Moon" plus Name displayed on Conference Hall display during breaks. 1/8 page in Conference Program for logo and sponsor
Moon	\$100 to \$499	Name listed in Conference program and can provide items for inclusion in attendee bags.

After you sign someone up, let us know and have them send a check made out to "Astronomical League" with **ALCon 2023** in the memo line, to the attention of

Carroll Iorg (AL President)
Astronomical League
9201 Ward Parkway, Suite #100
Kansas City, MO 64114

Juice launched from Europe’s Spaceport in Kourou, French Guiana, on an Ariane 5 launcher on 14 April 2023.

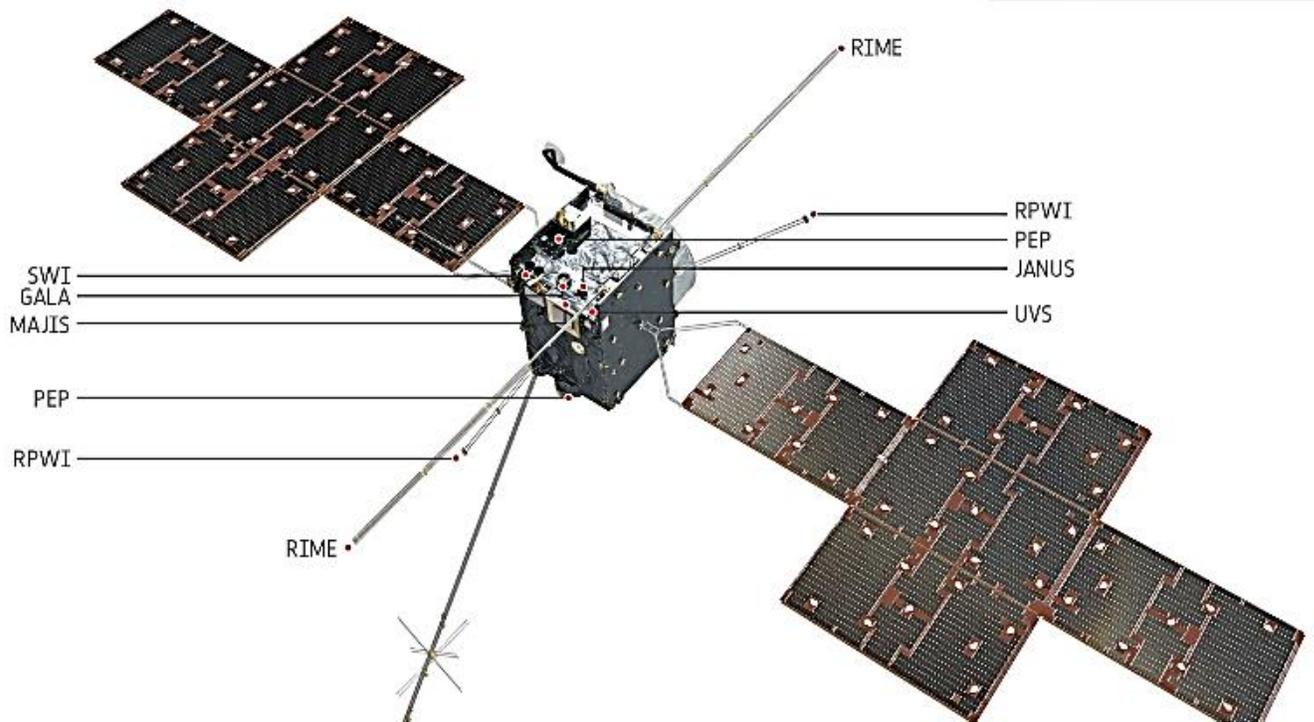
Article from European Space Agency website:

https://www.esa.int/Science_Exploration/Space_Science/Juice_factsheet

Name: Juice (Jupiter Icy Moons Explorer)

Juice’s Instruments

Instruments inside the spacecraft:
3GM:
- KaT
- USO
- HAA



Juice, will carry the most powerful remote sensing, geophysical, and in situ payload complement ever flown to the outer Solar System.

Mission objectives: Juice will characterise Jupiter’s ocean-bearing icy moons – Ganymede, Europa and Callisto – as planetary objects and possible habitats, explore Jupiter’s complex environment in depth, and study the Jupiter system as an archetype for gas giants across the Universe

Key question(s): Juice’s overarching theme is the emergence of habitable worlds around gas giants. In the Solar System, we know of only one body that has experienced the emergence of life: Earth. Is the origin of life unique to our planet, or could it occur elsewhere in our Solar System – or beyond?

The mission will consider two key themes of ESA’s Cosmic Vision 2015-2025: What are the conditions for planet formation and the emergence of life? and How does the Solar System work?



Messages from HRPO

Highland Road Park Observatory



FRIDAY NIGHT LECTURE SERIES

7:30pm / For ages fourteen and older. / No admission fee.

5 May = “The Lure of the Full Moon” Our constant companion and sole natural satellite is a night light, a source of outrageous stories (some true)—and for our generation, an ultimate goal for living and working. How did it originate? What can it give us? Will it stay with us?

12 May = “Life Cycles of the Stars” Like people, stars are born and experience death. There are several [unique and special stars](#) giving us an breathtaking array of targets for a night of viewing, and instilling a sense of wonder and fortune that our home is with the Sun near the edge of our star-filled Galaxy.

19 May = “Pioneer Venus 45th Anniversary” Using radar (one of over a dozen scientific instruments), this groundbreaker revealed [Venus](#) as no other human mission had.

26 May = “The Dark Universe” Everyday matter—galaxies, planets and our own bodies—are but a fraction of the mass of the Universe. The rest, labeled with the placeholder ‘[dark matter](#)’ is as mysterious as any classic detective novel. Will a new mission launching this summer uncover any clues?



EVENING SKY VIEWING

No admission fee. For all ages.

Fridays (5, 12, 19 and 26 May) from 8:30pm to 10pm

Saturdays (6, 20 and 27 May) 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 Cadets aged eight to twelve *\$5 per Cadet per week (\$6 if out-of-parish)
walk-ins welcome, but advanced registration via WebTrac strongly recommended
[activity #531990] * parents may stay with or leave Cadet
Four Cadet minimum and sixteen Cadets maximum per session.*

6 May = “Exploring Weather I”

13 May = “Rockets of the Past”

27 May = “Rockets of the Future”



PLUS NIGHT: “Free the Milky Way”

Saturday 13 May from 7pm to 10pm.

For all ages. No admission fee.

During Plus nights sky viewing starts a half-hour earlier and extra features are available to the public...

*The well-known marshmallow roast commences at the campfire ring behind the building, lasting at least one hour and ending no later than 9:30pm. (The campfire, like the sky viewing, is weather-dependent.)

*Four 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. The tour takes place at 8pm during Standard Time, and at 9pm during Daylight Time.

*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 20 May from 12pm to 2pm / No admission fee. For all ages.

Weather permitting, viewing of the Sun’s image in three different manners—transferred onto a white surface, directly with safely-filtered optical light, and directly in safely-filtered hydrogen-alpha wavelength—will take place for two hours. Protective clothing and sunscreen are recommended.



STEM EXPANSION: “Magnificent Flying Machines”

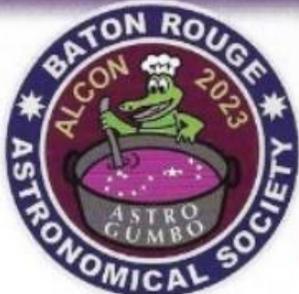
Saturday 20 May from 3:30pm to 7:30pm

For ages twelve to sixteen. / \$15 each per in-parish registrant; \$18 each per out-of-parish registrant. Advanced registration via WebTrac required [activity #531993].

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. There are also giveaways and door prizes.

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BIENVENUE EN LOUISIANE! (WELCOME TO LOUISIANA!)
Join us for this unique and exciting amateur astronomy gathering!



ALCON 2023

July 26-29, 2023
Hilton Baton Rouge
Capitol Center Hotel
201 Lafayette Street,
Baton Rouge, LA 70801

KEYNOTE SPEAKERS

- ★ David Eicher—writer, editor-in-chief of *Astronomy Magazine*
- ★ Fred Espenak—co-author of *Totality: The Great American Eclipses of 2017 and 2024*

FIELD TRIPS

- ★ Irene W. Pennington Planetarium
- ★ LIGO (Laser Interferometer Gravitational-Wave Observatory) Livingston*
- ★ Louisiana State University Physics & Astronomy *Spaces are limited for this trip!
- ★ Highland Road Park Observatory

SPEAKERS ★ Pranvera Hyseni ★ Guy Consolmagno ★ Dan Davis ★ And many more

Brought to Baton Rouge by the **Baton Rouge Astronomical Society**
Registration info coming soon! Check alcon2023.org

**Get ready for ALCON 2023 BATON ROUGE
Hosted by your own Astronomy Club.
Get on board. PARTICIPATE.**



OBSERVING NOTES MAY - 2023

Centaurus – The Centaur

Position: RA 13, Dec. -50°

Note: For six years I wrote these Observing Notes, featuring the 60 constellations we can see before midnight from Baton Rouge, containing objects above magnitude 10. For the next three years I expanded that information and put all my research in the same format, ending last April, 2022. Beginning with last May, Named Stars, Deep Sky and Other Stars are expanded to include new discoveries, and updated when more accurate information is available. Monthly updates will be made to Sky Happenings and all that appears below that title.

Named Stars

Rigel Kentaurus (Alpha Cen A), from the Arabic “al Rijial Kentaurus” – “The Centaur’s Foot”, or “rijl qanturis” – foot of the centaur”, sometimes called “Toliman”, ancient Egypt called it “Serk-t”, mag. -0.01, 14 39 40.90 -60 50 06.5, is a triple star system with the primary being a yellow-white main sequence dwarf star. It is the nearest star system to **Earth** and is the 4th brightest star in the night sky. The **A-B** separation is 14.1” at a PA of 228°, and the **A-C** separation is 131”. Also known as **363 Gould Centauri**, **HD 126620**, and **HIP 71683**.

Toliman (Alpha Cen B), from the Arabic “al-Zulman” – “The Ostriches”, mag. 1.35, 14 39 39.39 -60 50 22.1, is an orange main sequence dwarf star. The separation between **Alpha Centauri A** and **B** varies from 11 to 35 au, with an orbital period of 80 years. Also known as **HD 128621**, **HIP 71681**, and **364 Gould Centauri**.

Proxima Centauri (Alpha Cen C), mag. 11.05, 14 29 42.95 -62 40 46.1, is the third star in the Alpha Centauri system, and it is a red dwarf flare star that forms a visual double star with **Alpha Centauri A** and **B**. The separation from **AB** to **C** is 13,000 au (0.2 light years or 2.2°) and has an orbital period of about 1 million years. It is either a small main sequence star or a sub-dwarf star with an estimated mass of only 12.3% of a solar mass. It is the nearest star to **Earth**, and it has one planet in orbit with a period of 11.2 days and a separation of 7 million kilometers. Also known as **HIP 70890**, and **V645 Centauri**.

Hadar (Beta Cen), from the Arabic for “ground” and also “Wazn” – “weight”, sometimes called **Agena** – knee from Latin. The Chinese call it “Mah Fuh” – “The Horse’s Belly”; the bushmen of South Africa call it “Two Men that once were Lions” (with Alpha Centauri); and the Australian natives call it “Two Brothers” (with Alpha Centauri), mag. 0.61, 14 03 49.41 -60 22 22.7, is a triple star system with the primary star (**A**) being a blue-hued giant double-lined spectroscopic binary star with an orbital period of 357 days. The close binary is an X-ray source with the separation varying from 0.53 au to 55 au. The **B** star has a magnitude of 4.0 and an orbital period of 225 years with a separation of 0.4” (120 au) from the primary. Also known as **HD 122451**, **HIP 68702**, **304 Gould Centauri**, and **Vou 31**.

Muhlifain (Gamma Cen), from the Arabic for “Two Things”, the Chinese call it Koo Low” – “an Arsenal Tower”, mag. 2.20, 12 41 31.20 -48 57 35.6, is a double star with an orbital period of 89.3 years. Both stars are blue-white sub-giants and have a separation of 0.20” max (8 to 67 au). Both stars are magnitude 2.9 with a combined magnitude of 2.2. Also known as **HD 110304**, **HIP 61932**, **134 Gould Centauri**, and **SAO 223603**.

Na Wei (Delta Cen), from the Chinese for “The Third Star of the Horse’s Tail”, mag. 2.58, 12 08 21.54 -50 43 20.7, is a Be type star with a close companion at a separation of 68.7 milliarcseconds with a PA of 117.5°. Also known as **HD 105435**, **HIP 59196**, **94 Gould Centauri**, and **SAO 239689**.

Al Nä'ir al Batn al Kentaurus (Zeta Cen), from the Arabic for “The Bright One in the Centaur’s Body” or “Nayyir Badan Qantúris”, mag. 2.55, 13 55 32,43 -47 17 17.8, is a spectroscopic binary star with a period of 8.0239 days. Also known as **HD 121263**, **HIP 68002**, and **289 Gould Centauri**.
Rzybyski’s Star

Ke Kuan (Kappa Cen), from the Chinese meaning “a Calvary Officer”, mag. 3.13, 14 59 09.7 -42 06 14.9, it has an 11th magnitude companion with a separation of 3.9” (about 570 au). Also known as **HD 132200**, **HIP 73334**, and **385 Gould Centauri**.

Bidelman’s Helium Variable Star (V761 Centauri), mag. 4.41, 14 23 02,26 -39 30 42.46. Also known as **HD 125823**, **HIP 70300**, **342 Gould Centauri**, and **a Centauri**.

Dolfida (HD 117618) an Indonesian name, mag. 7.18, 13 32 25.0 -47 16 16, has two planets in orbit. Also known as **HIP 66047**.

Uklun (HD 102117), a Pitcairn Islands name, mag. 7.47, 11 44 50.46 -58 42 13.4, has one planet in orbit. Also known as **HIP 57291**.

Przybyski’s Star (V816 Centauri), mag. 8.02, 11 37 37.04 -46 42 34.88, is a chemically peculiar star and a **Delta Scudi** type variable star. Also known as **HD 101065** and **HIP 56709**.

Popper’s Star (HD 124448), mag. 9.99, 14 14 58.6 -46 17 19.3. Also known as **HIP 69619**.

Nyamien (WASP-15) an Ivory Coast name, mag. 10.9, 13 55 43,0 -37 09 35. Has one transiting planet.

Krzeminski’s Star (V779 Centauri), mag. 13.25, 11 21 15.78 -60 37 22.7, is the optical component of an X-ray binary star (**Centaurus X-3**), and an eclipsing binary star.

Lucy (BPM 37093), mag. 13.96, 12 38 49.93 -49 48 01.2, is a white dwarf star that is called “Lucy” for the **Beatles** song “*Lucy in the Sky With Diamonds*”. Also known as **V886 Centauri**.

Deep Sky:

NGC 5139 “Omega Centauri”, mag. 3.9, 13 26 45.89 -47 28 36.7, 36.3’x36.3’ in size, is a globular cluster that is extremely large, bright and rich; easily visible to the naked eye. It contains over 10 million **Population II** stars – the oldest stars to be observed – and the stars in the center of the cluster appear so close to each other that the separation between them is believed to be only 0.1 light year. This cluster was listed by **Ptolemy** in his *Almagest* (about 150 AD) as a star and **Bayer** listed it as the **Omega** star of the constellation in his *Uranometria* of 1603. It is suspected to be a dwarf spheroidal galaxy that encountered our galaxy, the **Milky Way**, and is the surviving nucleus. It has many unusual traits; it is chemically inhomogeneous – a trait that points to it being a remnant dwarf galaxy; it is composed of multiple stellar populations composed of metal-poor, metal-intermediate including a teeming population of extremely oxygen-poor and helium rich second generation stars; and metal-rich stars which exhibits a sodium to oxygen correlation (metal-rich globular clusters exhibit a sodium/oxygen anti-correlation), which clearly sets it apart from the normal population of globular clusters. It has been determined that an intermediate mass black hole (**IMBH**) of 40,000 solar masses should be present at the center of the cluster. Also known as **ESO 270-011**, **LEDA 2802650**, **CD-46 8646**, and **C1323-472**.

Cr 249, mag. 4.0, 11 38 38.6 -63 23 13, 18.5’x18.5’ in size, is an open cluster of 25 stars. Also known as **vdBH 121**.

IC 2944, “The Running Chicken Nebulae” (with IC 2948), mag. 4.5, 11 35 46.93 -63 01 11.4, 80’x50’ in size, contains an open cluster of 30 stars; detached, weak concentration of stars; small brightness range; magnitude of brightest star is 6.4. It surrounds the star **Lambda Centauri** and the globular cluster. **IC 2948** is 40’ to the southeast of **Lambda Centauri**. Also known as **C 100**, **HR 4467**, **HD 100841**, **HIP 56561**, **OC1 862.0**, **C1134-627**, **BRAN 362A**, **Gum 42**, and **RCW 62**.

NGC 3766, “The Pearl Cluster”, mag. 4.6, 11 36 14.6 -61 36 58, 13.9’x13.9’ in size, is an open cluster of 137 stars; detached, strong concentration of stars; small range in brightness; magnitude of brightest star is 7.5; pretty large. This cluster is visible to the naked eye. Also known as **C 97**, **Cr 248**, **BRAN 360**, **C1133-613**, **vdBH 120**, **OC1 860.0**, **ESO 129-027**, **Δ 289**, also called “**Rich Man’s Jewel**”

Box”.

Ru 95, mag. 5.0, 11 43 38.9 -61 09 18, 4' in size, is an open cluster of 30 stars; magnitude of brightest star is 12.0. Also known as **C1141-608**.

NGC 5662, mag. 5.5, 14 34 56.2 -56 38 24, 39.6'x39.6' in size, is an open cluster of 280 stars; detached, weak concentration of stars; large range in brightness; magnitude of brightest star is 7.0. Located 4° due north of **NGC 5617**. Also known as **C1431-563**, **vdBH 162**, **OCI 928**, **ESO 175-010**, and **Δ 347**.

NGC 5460, mag. 5.6, 14 07 27.8 -48 20 33, 31'x31' in size, is an open cluster of 46 stars; detached, weak concentration of stars; large range in brightness; magnitude of brightest star is 8.0. The centerpiece of a delicate arch of stars lying near the cluster's center is the brightest star, **HD 123201**. **ESO 221-025** (13.7 magnitude) is 0.5° to the north. Also known as **ESO 221-024**, **C1404-480**, **OCI 925.0**, and **Δ 431**.

Ru 96, mag. 5.6, 11 50 40.8 -62 08 24, 5.9'x5.9' in size, is an open cluster of 15 stars; magnitude of brightest star is 13.0. Also known as **C1148-618**.

NGC 5281, mag. 5.9, 13 46 27.4 -62 54 58, 7'x7' in size, is an open cluster of 40 stars; detached, strong concentration of stars; small range in brightness; magnitude of brightest star is 6.6; irregular round shape; small and bright. Also known as **OCI 911**, **Δ 273**, **C1343-626**, **vdBH 152**, **Cr 276**, **Mel 129**, and **ESO 097-005**.

NGC 5316, mag. 6.0, 13 54 03.8 -61 52 59, 14'x14' in size, is an open cluster of 80 stars; detached, no concentration of stars; small range in brightness; magnitude of brightest star is 7.8; pretty large. Also known as **C1350-615**, **OCI 913**, **Δ 282**, **OCL 913.0**, **vdBH 154**, and **ESO 133-006**.

NGC 5617, mag. 6.3, 14 29 48.5 m-60 43 08, 7'x7' in size, is an open cluster of 80 stars; detached, strong concentration of stars; large range in brightness; magnitude of brightest star is 8.8; large. Contains at least 5 blue straggler stars as well as two red giant stars. A photometric survey for variable stars detected 35 slowly pulsing B-type stars, 30 **Delta Scuti** types, and 20 **Gamma Doradus** candidates, as well as 40 eclipsing and 15 ellipsoidal binary stars. **NGC 5662** is 4° to the north. Also known as **OCI 919**, **Δ 302**, **C1426-605**, **vdBH 159**, and **ESO 134-004**.

Lynga 2, mag. 6.4, 14 24 20.4 -61 19 41, 13'x13' in size, is an open cluster of 30 stars; not well detached; moderate brightness range; magnitude of brightest star is 7.7. Also known as **ESO 134-002**, **C1420-611**, **vdBH 157**, and **OCI 916**.

Stock 16, mag. 6.5, 13 19 26.4 -62 37 19, 20' in size, is an open cluster of 83 stars and is located in **RCW 75 (Gum 48a)**. Also known as **OCI 898** and **C1315-623**.

NGC 5128, “**Centaurus A**”, mag. 6.8, 13 25 27.61 -43 01 08.8, 25.7'x17.78' in size, is a radio galaxy; very bright, very large and very elongated; dark central band; might be a pair of colliding galaxies; a radio source. It is the third brightest visual galaxy in the **Southern Hemisphere** and the fifth brightest galaxy in our night sky. It is the nearest radio galaxy and the nearest galaxy with an active nucleus. It is the second double-lobed radio source discovered, the brightest radio source in the **Southern Hemisphere**, and the largest extra-galactic radio source in the sky. There are 607 known globular clusters in **NGC 5128**, with a further 800 candidates. It is the optical component of **Centaurus A**. The overall radio footprint in the sky is 8°x4°, with a super massive black hole in the center of the galaxy that has $5.5 \pm 3.0 \times 10^7$ masses of the **Sun**. Located 4.5° north of the **Omega Centauri Cluster**. Also known as **C 77**, **Dunlop 482**, **ESO 270-009**, **IRAS 13225-4245**, **LEDA 46957**, **Arp 153**, **AM 1322-424**, **PGC 46957**, **MCG-7-28-001**, **PKS 1322-428**, **PKS 1322-42**, **PKS 1322-427**, and **PKS J1325+4303**.

IC 2948 (with **IC 2944**), “**The Running Chicken Nebula**”, mag. 7.0, 11 39 17.3 -63 26 24, 12.6'x12.6' in size, contains an open cluster (the **Centaurus Cluster**) with 30 stars; detached, weak concentration of stars; small brightness range; magnitude of brightest star is 6.4. See **IC 2944** below. Also known as **C1136-632**, **RCW 62**, **vdBH 122**, and **OCI 864.0**.

Teu 77, mag. 7.25, 11 53 15.5 -62 36 32, 1.5'x1.5' in size, is an open cluster. The star **HD 309205** is 2.8' to the north-northeast. Also known as **DSH J1153.2-6236**.

NGC 5786, mag. 7.4, 14 58 56.25 -42 00 48.27, 1.53'x1.22' in size, is a faint and moderately elongated

galaxy; pretty bright nucleus. Also known as **ESO 327-037**, **IRAS 14556-4348**, **LEDA 53527**, **MCG-7-31-004**, **PGC 53527**, and **ESO 145541-4148.0**.

Ru 108, mag. 7.5, 13 32 03.5 -58 30 32, 12.7'x12.7' in size, is an open cluster ± 15 stars; detached, no concentration of stars; moderate brightness range; magnitude of brightest star is 8.5. Also known as **OCI 907**, **OCI 907.0**, **Lund 641**, and **C1328-582**.

NGC 5286, mag. 7.6, 13 46 26.81 -51 22 27.3, 9.1'x9.1' in size, is a globular cluster with a medium concentration of stars; pretty large, very bright, round, very well resolved. It may be one of the oldest globular clusters in the **Milky Way**, with an estimated age of 12.4 billion years. An intermediate mass black hole (**IMBH**) is suspected at the center of the cluster. Located 5° south-southeast of **Omega Centauri** (**NGC 5139**). Also known as **ESO 220-038**, **C 84**, **Dunlop 388**, **C1343-511**, and **LEDA 2802652**.

NGC 3680, mag. 7.6, 11 25 34.1 -43 14 24, 17.9'x17.9' in size, is an open cluster of 30 stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 10.1. Also known as **OCI 823**, **Δ 481**, **Mel 106**, **C1123-429**, and **ESO 265-032**.

NGC 5138, mag. 7.6, 13 27 19.0 -59 01 23, 8.4'x8.4' in size, is an open cluster of 40 stars; detached, weak concentration of stars; moderate range in brightness; magnitude of brightest star is 10.3. Also known as **OCI 902**, **OCI 902.0**, **Cr 270**, **Lund 636**, **ESO 132-007**, and **C1324-587**.

Cr 272, mag. 7.7, 13 30 20.6 -61 19 08, 10'x10' in size, is a cluster of 40 stars; detached, no concentration of stars; small range in brightness; magnitude of brightest star is 10.5. It is a young cluster of only 2 million years of age. Also known as **Lund 639**, **OCI 904**, and **C1327-606**.

Tr 21, mag. 7.7, 13 32 16.3 -62 47 13, 5'x5' in size, is an open cluster of 40 stars; detached, weak concentration of stars; moderate range in brightness; magnitude of brightest star is 10.3. Also known as **C1328-625**, **vdBH 148**, **Cr 274**, and **OCI 963**.

NGC 5606, mag. 7.7, 14 27 47.0 -59 37 55, 3'x3' in size, is an open cluster of 30 stars; detached, strong concentration of stars; large brightness range; magnitude of brightest star is 8.9. Also known as **OCI 922**, **ESO 134-003**, **vdBH 158**, **Cr 281**, and **C1424-594**.

Tr 22, mag. 7.8, 14 31 07.9 -61 10 08, 11'x11' in size, is an open cluster of 50 stars; detached, weak concentration of stars; moderate brightness range; magnitude of brightest star is 10.1. Probably not a cluster. Also known as **vdBH 161** and **C1427-609**.

NGC 5617, mag. 8.0, 14 29 48.5 -60 43 08, 7'x7' in size, is an open cluster of 80 stars; detached, strong concentration of stars; large range in brightness; magnitude of brightest star is 8.8. Also known as **OCI 919**, **Δ 302**, **vdBH 159**, **ESO 134-004**, and **C1426-605**.

NGC 3960, mag. 8.1, 11 50 33.2 -55 40 11, 8.5'x8.5' in size, is an open cluster of 317 stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 11.5; pretty large. Also known as **Mel 108**, **Cr 250**, **ESO 170-014**, **vdBH 123**, and **C1148-554**.

Basel 18, mag. 8.2, 13 27 52.1 -62 18 22, 6'x6' in size, is an open cluster of 20 stars; magnitude of brightest star is 8.2. Also known as **C1325-621**.

Hogg 17, mag. 8.3, 14 33 50.2 -61 19 34, 4'x4' in size, is an open cluster of 10 stars; detached, weak concentration of stars; large brightness range; magnitude of brightest star is 11.0. Also known as **C1429-615**.

NGC 3918, “**The Blue Planetary Nebula**”, mag. 8.4, 11 50 17.77 -57 10 57.01, 0.26'x0.26' in size, is a small, round planetary nebula with a disk of uniformed brightness; bluish color; central star is magnitude 13.2. This is the brightest planetary nebula in the **Southern Hemisphere**. Sometimes called “**The Southerner**”. Also known as **PK 294+04.1**, **ESO 170-013**, **AM 1147-565**, **IRAS 11478-5631**, **He 2-74**, **PNG 294.6+04.7**, **Sa 2-81**, **VV 61**, **ARO 514**, **Wray 16-101**, **GSC 08639-02315**, and **HD 102854**.

Hogg 16, mag. 8.5, 13 29 18.0 -61 20 00, 6'x6' in size, is an open cluster of 10 stars; detached, weak concentration of stars; large brightness range; magnitude of brightest star is 11.0. Also known as **Basel 19**, **C1326-609**, **C1325-610**, and **OCI 901**.

NGC 4945, mag. 8.6, 13 05 27.27 -49 28 04.44, 20.42'x4.27' in size, is a Sayfert 2 galaxy, bright, very large, and extremely elongated; nearly edge on; it has an active galactic nucleus (AGN). Bracketed by

the visual pair of stars **Xi¹** and **Xi² Centauri**, which are only 40' apart. This is the third brightest galaxy in the **IRAS Point Source Catalog**, earning it yet another designation: an **Ultraluminous Galaxy**, with more than half its total luminosity radiated in the far infrared. A water maser emission was detected in 1970. **NGC 4976** is 0.5° to the east, and **NGC 4945A** (it is not a companion to **NGC 4945**) is 17.2' to the south-southeast. Also known as **ESO 219-024, IRAS 13025-4911, LEDA 45279, PKS 1302-49, PKS 1302-492, PKS J1305-4928, Dunlop 411, PGC 45279, and C 83. Cr 271**, mag. 8.7, 13 29 48.7 -64 11 56, 5.9'x5.9' in size, is an open cluster of 16 stars. Also known as **C1326-639** and **OCI 900**.

IC 2944, the "**Lambda Centauri Nebula**", mag. 8.8, 11 38 20.0 -63 22 22, 60'x75' in size, is an open cluster along with **IC 2948** compose the "**Running Chicken Nebula**". The nebula totally surrounds the star **Lambda Centauri**. Also known as **Cr 249, Gum 42, OCI 867.0, BRAN 362A, C1134-627, and RCW 62**.

NGC 5102, "**Iota's Ghost**", mag. 8.8, 13 21 57.61 -36 37 48.37, 9.55'x3.39' in size, is a bright galaxy; very bright nucleus. It has a blue-hued bulge, indicating recent star formation in the central region.

Located 14' northeast of **Iota Centauri**. Also known as **ESO 382-050, AM 1319-362, ESO 131907-3622.2, IRAS 13191-3622, LEDA 46674, MCG-6-29-031, and PGC 46674**.

NGC 4852, mag. 8.9, 13 00 11.0 -59 36 25, 14.8'x14.8' in size, is an open cluster of 60 stars. Also known as **C1257-593, vdBH 143, ESO 131-017, and Dunlop 311**.

NGC 4945, mag. 9.0, 13 05 27.27 -49 28 04.44, 20.42'x4.27' in size, is a galaxy that is bright, very large, and extremely elongated; nearly edge on. Located 10' east of **Xi¹ Centauri**. Has a companion 9.7' to the north-northeast. **Xi² Centauri** is 30' to the south-southeast. Also known as **ESO 219-024, IRAS 13025-4911, LEDA 45279, PKS 1302-49, PKS 1302-492, PKS J1305-4926, AM 1302-484, PGC 45279, Dunlop 411, C 83, and ESO 130231-4912.2**.

NGC 5168, mag. 9.1, 13 31 09.8 -60 56 42, 5.3'x5.3' in size, is an open cluster. Also known as **C1327-606, vdBH 147, OCI 905, and ESO 132-010**.

Gum 39, mag. 9.18, 11 28 54.18 -62 39 09.83, 20'x15' in size, is a star, **HD 99897**. Also known as **CD-61 3068, HIP 56021, GSC 08976-05141, SAO 251420, RCW 60, and Lund 116**.

NGC 4320, mag. 9.4, 12 17 20.4 -55 07 123, 6' in size, is an open cluster of 15 stars. Also known as **C1214-548**.

Teu 79, mag. 9.5, 13 23 38.8 -63 40 10, 4.4'x4.4' in size, is an open cluster. Also known as **DSH J1323.6-6340**.

IC 4291, mag. 9.7, 13 36 54.5 -62 05 28, 4'x4' in size, is an open cluster. Also known as **C1333-619, Pismis 18, vdBH 149, OCI 906, and ESO 132-015**.

Deep Sky Objects Beyond Magnitude 10 That Are of Interest:

UGCA 334, "**Hardcastle's Galaxy**", mag. 10.99, 13 12 55.4 -32 41 21, 1.71'x0.37' in size, is an emission-line galaxy. Also known as **AGC 29351, AM 1310-322, ANON 1310-32, ESO 443-083, IRAS 13101-3225, LEDA 4501, MCG-5-31-039, ESO 131009-3225.4, and PGC 45901**.

MCG-7-28-004, "**Fourcade-Figueroa**", mag. 11.4, 13 34 47.3 -45 32 51, 11.48'x1.74' in size, is a galaxy. Also known as the "**Bow-Tie Nebula**", **AM 1331-451, ANON 1332-45, ESO 270-017, IRAS 13317-4517, LEDA 47847, ESO 133139-4517.1, UKS 1332-453, and PGC 47847**.

Palomar 12, "**Capricorn Dwarf**", mag. 11.89, 21 46 38.84 -21 15 09.4, 5.4'x5.4' in size, is a globular cluster. Also known as **GCl 123, C2143-214, UGCA 421, ESO 600-0111, ESO 214351-2129.0, and MCG-4-51-013**.

Southern Crab Nebula, mag. 14.2, 14 11 52.06 -51 26 24.1. Also known as **V852 Centauri, He2-104, IRAS 14085-5112, PNG 315.4+09.4, and Wray 16-147**.

ESO 172-007, "**The Boomerang Nebula**" 12 44 46.09 -54 31 13.32, 1.44'x0.72' in size, is a post AGB star (a planetary nebula at a temperature of only 1° Kelvin). Also known as **IRAS 12419-5414, GN12.41.9, LEDA 3074547, the "Centaurus Bipolar Nebula", and "The Ice Queen"**.

ESO 133-002, "**The Hammer Nebula**", 13 44 00.03 -60 49 46.86, 7.5'x7.5' in size, is a planetary nebula. Also known as **AM 1340-002, PK 309+01.1, PNG 309.2+01.3, SuSt 1, and VBRC 5**.

SCL 124, 13 06 00 -33 04 00, is a **Shapley Super Cluster of Galaxies**. It contains the **Centaurus**

Abell Clusters (18 clusters, 1326 galaxies) in it among others.

The Southern Coal Sack, “Coal Sack Nebula”, 12 50 00 -62 30 00, 7’x5’ in size, is a dark nebula. The Incas called it “Yutu” – a partridge-like South American bird or “Tinamus” The Australian aboriginal astronomy called it “the head of the Emu”.

Centaurus Cluster, **Abell 3526**, 12 48 51.8 -41 18 21, is a cluster of hundreds of galaxies with the brightest being **NGC 4696**.

The Centaurus Chain, is a chain of galaxies - **NGC 4616, 4622, 4650, 4661, 4603, and 4650A**.

Deep sky objects in Centaurus: 211 NGC; 68 IC; 3 UGCA; 1 Arp; 670 ESO 1 PHL; 1 Pal; 2 HCG; 1 Bar; 2 Str; 153 MCG; 27 AGCS; 26 AS; 3 Quasars; 10 Radio galaxies; 30 PNG; 2 Alessi; 2 ASCC; 3 Ly; 2 Teu; 2 Bas; 2 Hogg; 2 Gum; 2 Stock; 2 Danks; 26 Lo; 20 PGC; 5 RCW; 17 Cr; 4 Slo; 9 SDC; 7 Caldwell; 10 Ru; 8 Sa; 24 Lo; 11 He2; 21 vdBH; 1 Pismis; 2 Wray; 2 Tr; 1 Bernes; 1 GN12.41.9; 1 GX304.1; 1 SA; 1 Pol; 1 PB; 1 Klemola; 1 O’Neal; 1 K1; 1 LoTr; 1 FG; 2 SAI; 1 Rst; 1 BIDz; 2 PKS; 2 Cen X; 1 Ced; 2 Slr; 5 IRAS; 4 PK; 1 SCL; and 1 Coal Sack for a partial total of 1428 objects.

Other Stars:

340 Gould Centauri, mag. 4.76, 14 22 37.12 -58 27 33.0, is a quadruple star. Also known as **HD 125628**, and **HIP 70264**.

185 Gould Centauri, mag. 4.85, 13 12 03.47 -37 48 11.3, has one planet in orbit. Also known as **HD 114613**, **HIP 64408**, and **SAO 204227**.

HR 4523, mag. 4.89, 11 46 38.25 -40 30 04.8, has one planet in orbit. Also known as **HD 102365**, **HIP 57443**, 66 Gould Centauri, and **SAO 223020**.

HD 120987, mag. 5.53, 13 33 32.82 -35 39 51.1, is a quintuple star. Also known as **HIP 67819**, and **286 Gould Centauri**.

HD 108063, mag. 6.10, 12 25 08.62 -42 30 51.3, is an extremely metal-rich star. Also known as **HIP 60591**, **117 Gould Centauri**, and **SAO 223426**.

HD 121056, mag. 6.17, 13 53 52.0 -35 18 52, has two planets in orbit. Also known as **HIP 67851**, and **287 Gould Centauri**.

HD 120457, mag. 6.43, 13 50 19.39 -39 54 03.0, has one planet in orbit. Also known as **HIP 67537** and **275 Gould Centauri**.

HD 114729, mag. 6.69, 13 12 44.26 -31 52 24.1, has one planet in orbit. Also known as **HIP 64459** and **188 Gould Centauri**.

HD 117253, mag. 6.75, 13 30 25.0 -58 39 52, has one planet in orbit. Also known as **HIP 65891**.

HD 115470, mag. 6.80, 13 18 05.0 -44 03 19, has one planet in orbit. Also known as **HIP 64892**.

HD 116434, mag. 7.01, 13 24 36.0 -51 30 16, has one planet in orbit. Also known as **HIP 65426**.

HD 117207, mag. 7.26, 13 29 21.11 -35 34 15.6, has one planet in orbit. Also known as **HIP 65808**.

HD 121504, mag. 7.54, 13 57 17.24 -56 02 24.5, has one planet in orbit. Also known as **HIP 68162**.

HD 109749, mag. 8.10, 12 37 16.38 -40 48 43.6, has one planet in orbit. Also known as **HIP 61595**.

HD 101930, mag. 8.21, 11 43 30.11 -58 00 24.8, has one planet in orbit. Also known as **HIP 57172**.

HD 114386, mag. 8.73, 13 10 39.82 -35 03 17.2, has two planets in orbit. Also known as **HIP 64295**.

HD 113538, mag. 9.02, 13 04 57.0 -52 26 35.0, has two planets in orbit. Also known as **HIP 63833**.

HD 125595, mag. 9.07, 14 21 25.0 -40 23 39.0, has one planet in orbit. Also known as **HIP 70170**.

HD 108236, mag. 9.2, 12 26 17.8 -51 21 47.0, has four planets in orbit. Also known as **HIP 60689**.

HD 103197, mag. 9.41, 11 52 52.98 -50 17 34.2, has one planet in orbit. Also known as **HIP 57931**.

HD 120411, mag. 9.9, 13 50 06.0 -40 50 09.0, has one planet in orbit. Also known as **HIP 67522**.

The following are stars beyond magnitude 10 that are of interest:

WASP-131, mag. 10.01, 14 00 46.0 -30 35 01.0, has one transiting planet in orbit.

WASP-167, mag. 10.05, 13 04 10.5 -35 32 58, has one transiting planet in orbit.

WASP 87A, mag. 10.07, 12 21 18.01118-61 -52 50 27.0, has one transiting planet in orbit.

PSR B1259-63, mag. 10.08, 13 02 47.66 -63 50 08.7, is a pulsar in a binary system.

There are six more WASP stars that have one transiting planet in orbit, and one WASP star that has two transiting planets in orbit.

1A1118-61, mag. 12.12, 11 20 57.18 -61 55 00.2, is a high-mass X-ray binary star.

GJ 3737, mag. 12.74, 12 38 49.14 -38 22 52.80, is a red dwarf star.

2M1207, mag. 20.15, 12 07 33.47 -39 32 54.0, is a brown dwarf star with one planet in orbit. Also known as 2MASS WJ1207334-393254.

Asterisms:

Southern Pointers - Alpha and Beta Centauri point toward the Southern Cross.

Dictis a nautis or the Crosiers of Halley's Catalog – Epsilon, Zeta, Nu, and Xi² Centauri.

Wei, “The Balance” – Mu, Epsilon, and Phi Centauri.

Choo, a “Pillar” – Iota, g, k, Psi, and A Centauri with another adjacent star.

Horse's Tail (Chinese) -Delta, G, and Rho Centauri.

Stars (partial list) in Centaurus: 31 Greek; 12β; 52 Numbered; 121 Lettered; 190 Variable (V); 28 h; 10 I; 8 Howe; 3 Str; 6 BrsO; 3 CorO; \$ See; 2 Sh; 3 HN; 2 B; 1 Σ; 1 S; 1 Pol; 2 Rss; 11 Δ; 5 R; 1 HDS; 1 Ø; 1 Hld; 2 Gli; 1 Vou; 1 HdO; 2 RMK; 1 LDS; 3 CapO; 1 MeLO; 1 Sir; 1 Rst; 2 Ho; and 1 Fg for a total of 505 Stars in Centaurus.

Sky Happenings: May 2023

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

May 1st - Mercury is in inferior conjunction at 6 PM CDT.

May 2nd - Pluto is stationary at 6 PM CDT.

May 3rd - Evening: The waxing gibbous Moon is in Virgo, high in the south-southeast, about 2° to the upper left of Spica.

May 5th - Full Moon occurs at 12:43 PM CDT.

May 6th - Morning: The Eta Aquariid meteor shower peaks – the Moon, just past full, will severely hamper the display.

May 7th - Morning: The waning gibbous Moon will be 2.5° to the right of Antares in the south-southwest,

Antares is 1.5° south of the Moon at 8 AM CDT.

May 9th - Venus is 1.8° north of M35 at 12 Noon CDT,

Uranus is in conjunction with the Sun at 3 PM CDT,

Evening: Mars, in Gemini, is 5° to the lower left of Pollux, with Venus to the pair's lower right in the west-northwest.

May 10th - Mars passes 5° south of Pollux at 11 AM CDT.

May 11th - The Moon is at perigee (229,449 miles or 369,343 km from Earth) at 12:05 AM CDT.

May 12th - Last Quarter Moon occurs at 9:28 AM CDT.

May 13th - Morning: In the east-southeast the Moon, one day past last quarter, will rise in tandem with Saturn with about 5° separation,

Dwarf planet Ceres is stationary at 6 AM CDT,

The Moon passes 3° south of Saturn at 8 AM CDT.

May 14th - Mercury is stationary at 2 AM CDT,

The Moon passes 2° south of Neptune at 8 PM CDT.

May 15th - A double transit on Jupiter starts at 12:57 PM CDT.

May 17th - A double shadow transit on Jupiter starts at 6:57 AM CDT,

Double transits occur on Jupiter starting at 7:27 AM CDT,

The Moon passes 0.8° north of Jupiter at 8 AM CDT with an occultation for most of North America,

The Moon passes 4° north of Mercury at 9 PM CDT.

May 19th - New Moon occurs at 10:53 AM CDT (lunation 1242).

May 20th - Double shadow transit of Jupiter starts at 7:48 PM CDT,

Double transit on **Jupiter** starts at 8:14 PM CDT,
 Dusk: In the west **Venus**, **Castor**, and **Pollux** are arranged in a triangle shape with the **Moon** to the lower right of them.

- May 22nd** - Double shadow transits on **Jupiter** start at 2:17 PM CDT,
 Double transit on **Jupiter** starts at 3:23 PM CDT,
 Evening: The waxing crescent **Moon** and **Venus** are 5° apart in **Gemini**, low in the west-northwest.
- May 23rd** - **The Moon** passes 2° north of **Venus** at 7 AM CDT,
 Evening: The **Moon** is 2° to the lower left of **Pollux**, with **Venus** 5.5° below the pair, **Pollux** is 1.6° north of the **Moon** at 9 PM CDT.
- May 24th** - Double shadow transit of **Jupiter** starts at 8:46 AM CDT,
 Double transit on **Jupiter** starts at 9:40 AM CDT,
 The **Moon** passes 4° north of **Mars** at 1 PM CDT,
 Dusk: In the west the lunar crescent, in **Cancer**, is equidistant (around 4°) from both **Mars** and **M44 (Beehive Cluster)**.
- May 25th** - The **Moon** is at apogee (251,350 miles or 404,508 km from **Earth**) at 8:39 PM CDT.
- May 26th** - Evening: The **Moon**, one day short of first quarter, is less than 3.5° from **Regulus** in the west.
- May 27th** - **First Quarter Moon** occurs at 10:22 AM CDT,
 Double shadow transit on **Jupiter** occurs at 9:43 PM CDT,
 Double transit on **Jupiter** occurs at 11:06 PM CDT.
- May 28/29** - Dusk: **Venus** and **Pollux** are 4° apart above the west-northwest horizon.
- May 29th** - **Mercury** is at greatest western elongation (25°) at 1 AM CDT,
 Double shadow transit on **Jupiter** starts at 4:37 PM CDT,
 Double transit on **Jupiter** starts at 7:56 PM CDT.
- May 30th** - **Venus** passes 4° south of **Pollux** at 11 AM CDT,
Mars is at aphelion (155 million miles from the **Sun**) at 4 PM CDT.
- May 31st** - Morning: The waxing **Moon** and **Spica** descend toward the west-southwest horizon with 4° separating them,
 Double shadow transit on **Jupiter** starts at 10:50 AM CDT,
 Double transit on **Jupiter** starts at 12:31 PM CDT,
 Evening: **Mars** hovers on the outskirts of **M44 (Beehive Cluster)** in the west after sunset.

Planets:

Mercury – **Mercury** reaches inferior conjunction on May 1st and will move into the morning sky shortly after mid-month but will be faint and beyond reach for the first three weeks of the month. On the 23rd, the planet will reach magnitude 1 and is 7° due east of Jupiter. The planet will be 4° high 30 minutes before sunrise. On the 29th, the planet reaches greatest western elongation (25°) at magnitude 0.5.

Venus – **Venus** starts the month in the western sky, glowing at magnitude -4.1, and will brighten to magnitude -4.4 by May 31st. On May 1st, the planet will be between the horns of **Taurus the Bull**. A week later, the planet will have moved to a point north of **Eta** and **Mu Geminorum** on the 9th, reaching maximum declination north (26°) and its farthest point above the ecliptic. A telescope will show a 63% gibbous disk at 18" across. On the 15th, the planet is at magnitude -4.3 and is roughly 14° below the **Moon**, **Castor**, and **Pollux**. On the 22nd, the **Moon** is roughly 5° below and to the right of the planet. On the 23rd, the **Moon** is about 2° below and left of **Pollux**, sitting between **Venus** and **Mars**. The planet ends the month south of **Pollux** and on the 31st a telescope will show a 52% illuminated disk spanning 23".

Mars – **Mars** is 5° due south of **Pollux** on May 9th, shining at magnitude 1.4 with **Pollux** at magnitude 1.2. On the 15th, the planet will be with **Castor** and **Pollux** - the three will form a more-or-less straight line that will span 11°. The planet will cross into **Cancer** by the 17th and will drift closer to **M44 (Beehive Cluster)**. On the 24th, the planet is 5° west of **M44**. The planet will end the month only 1° shy of **M44**. Through a telescope the planet will span 5".

Jupiter – **Jupiter** emerges in the morning twilight very early in May. There are 8 transit events on the planet this month. On the 15th there will be a double transit on the planet – Ganymede will ingress at 10:53

AM CDT, with **Io's** shadow's ingress at 12:23 PM CDT. **Io** will ingress at 12:57 PM CDT, with **Ganymede** egressing at 1:07 PM CDT. **Io's** shadow will egress at 2:33 PM CDT with **Io** egressing at 3:08 PM CDT. On the 17th, there will be double shadow and double transits on the planet. It all starts at 5:34 AM CDT when **Europa's** shadow starts ingress followed by **Europa's** ingress at 6:48 AM CDT. **Io's** shadow will ingress at 6:51 AM CDT followed by **Io's** ingress at 7:27 AM CDT. **Europa's** shadow will egress at 7:56 AM CDT followed by **Io's** shadow's egress at 9:02 AM CDT. **Europa** will egress at 9:12 AM CDT followed by **Io's** egress at 9:38 AM CDT. On the 20th, there is another double shadow and double transit of the planet. It starts with **Europa's** shadow's ingress at 6:53 PM CDT followed by **Io's** shadow will ingress at 7:48 PM CDT. **Europa** will ingress at 8:14 PM CDT with **Io's** ingress at 8:28 PM CDT. **Europa's** shadow will egress at 9:16 PM CDT with **Io's** shadow egressing at 9:59 PM CDT. **Io** will egress at 10:38 PM CDT with **Europa's** egress also at 10:38 PM CDT. There is a repeat on the 22nd with **Ganymede's** shadow starting ingress at 12:36 PM CDT and **Io's** shadow's ingress at 2:17 PM CDT. **Ganymede's** shadow will egress at 2:43 PM CDT with **Io** starting ingress at 2:58 PM CDT. **Ganymede** will ingress at 3:23 PM CDT with **Io's** shadow's egress at 4:27 PM CDT. **Io** will egress at 5:08 PM CDT with **Ganymede's** egress at 5:33 PM CDT. There are 4 more events this month! On the 24th, **Europa's** shadow will ingress at 8:12 AM CDT. **Io's** shadow will ingress at 8:46 AM CDT followed by **Io's** ingress at 9:28 AM CDT. **Europa** will ingress at 9:40 AM CDT with **Europa's** shadow ingress at 10:34 AM CDT. **Io's** shadow will egress at 10:56 AM CDT. **Io** will egress at 11:38 AM CDT with **Europa's** egress at 12:03 PM CDT. On the 27th, **Europa's** shadow starts ingress at 9:31 PM CDT followed by **Io's** shadow's ingress at 9:43 PM CDT. **Io** will ingress at 10:28 PM CDT followed by **Europa's** ingress at 11:08 PM CDT. **Io's** shadow will egress at 11:53 PM CDT with **Europa's** shadow's egress at 11:54 PM CDT - only one minute later. **Io** will egress at 12:39 AM CDT (on May 28th), followed by **Europa's** egress at 1:29 AM CDT. On the 29th, **Io's** shadow will ingress at 4:11 PM CDT with **Ganymede's** shadow's ingress at 4:37 PM CDT. **Io** will ingress at 4:58 PM CDT with **Io's** shadow's egress at 6:42 PM CDT. **Ganymede** will ingress at 7:52 PM CDT. **Io** will egress at 8:09 PM CDT with **Ganymede's** egress at 9:58 PM CDT. And last, but not least, on the 30th, **Io's** shadow will ingress at 10:40 AM CDT with **Europa's** shadow's ingress at 10:50 AM CDT. **Io** will ingress at 11:29 AM CDT with **Europa's** ingress at 12:31 PM CDT. **Io's** shadow will egress at 12:50 PM CDT with **Europa's** shadow's egress at 1:12 PM CDT. **Io** will egress at 1:39 PM CDT with **Europa's** egress at 2:54 PM CDT.

Saturn – **Saturn** will rise about 3:30 AM local time on May 1st, and by 1:30 AM on the 31st. The planet, in mid-Aquarius, is the brightest object (magnitude 0.8) in the vicinity. An hour before dawn is the best time to observe when the planet will stand at more than 20° elevation in the southeastern sky. The rings are tilted by 8° to our line-of-sight, and the planet will span 17". The planet's brightest moon, **Titan**, will shine at magnitude 8.7. **Titan** will stand due north of the planet on May 4th and 20th, and due south on May 12th and 28th. **Iapetus** will reach its faint eastern elongation on the 14th.

Uranus – **Uranus** is too close to the **Sun** – it will be in conjunction on May 9th – for observing during most of the month. In late May, you might catch it a half-hour before sunrise.

Neptune – **Neptune** can be spotted with binoculars, shining at magnitude 7.8. The planet will rise nearly an hour after **Saturn** (about 4:30 AM local time) and will remain low in the east an hour before dawn on May 1st. The planet's visibility improves by the 31st when it will stand 20° high in the eastern sky at the onset of twilight. The planet, a bluish object, lies within 1° of **20 Piscium**, forming a triangle with **24 Piscium**. The three will lie some 5° southeast of the 4th magnitude star **Lambda Piscium**. During the month the planet will wander east, farther from **20 Piscium**.

Moon – Favorable librations for May are as follows: **Vasco de Gama Crater** on May 6th; **Gerald Crater** on May 8th; **Brianchon Crater** on May 10th; and **Hale Q Crater** on May 24th.

Greatest North Declination on the 23rd (+27.8°)

Greatest South Declination on the 9th (-27.8°)

Libration In Longitude: East Limb Most Exposed on the 19th (+4.7°)

West Limb Most exposed on the 5th (-5.3°)

Libration In Latitude: North Limb Most Exposed on the 11th (+6.7°)

South Limb Most Exposed on the 25th (-6.8°)

USA Edition unless otherwise noted.

Asteroid **1 Ceres** – Ceres positions are as follows: On May 6th – 11 58 .70 +15 18.6, at magnitude 7.7 in **Leo**; on the 16th – 11 58.10 +14 19.0, at magnitude 7.9 in **Leo**; and on the 26th – 11 59.89 +13 05.1, at magnitude 8.1 on the **Leo/Virgo border**. Ceres positions, by my estimates, are as follows: On May 1st – about 2.8° northeast of **Denebola (Beta Leonis)**; on the 5th – about 2.5° northeast of **Denebola**; on the 10th – about 2.2° east and a little north of **Denebola**; on the 15th – about 2.3° east and a little south of **Denebola**; on the 20th – about 2.6° east-southeast of **Denebola**; on the 25th – about 3.2° southeast of **Denebola**; and on the 30th – about 3.9° southeast of **Denebola**.

Asteroid **2 Pallas** – Pallas's positions are as follows: On May 6th – 07 59.33 +04 31.8, at magnitude 8.7 in **Canis Minor**; on the 16th – 08 17.29 +06 04.2, at magnitude 8.8 in **Hydra**; and on the 26th – 08 35.85 +0714.5, at magnitude 8.9 in **Hydra**.

Asteroid **7 Iris** – Iris's positions are as follows: On May 6th – 14 17.04 -19 17.9, at magnitude 9.6 in **Virgo**; and on the 16th – 14 08.18 -18 16.0, at magnitude 9.8 in **Virgo**.

Asteroid **11 Parthenope** – Parthenope's positions are as follows: On May 16th – 17 16.95 -16 34.4, at magnitude 9.8 in **Ophiuchus**; and on the 26th – 17 09.09 -16 25.4, at magnitude 9.6 in **Ophiuchus**.

Asteroid **15 Eunomia** – Eunomia's position on May 26th is 19 38.46 -26 19.5, at magnitude 9.8 in **Sagittarius**.

Comets – All information given for comets is from *ALPO* unless otherwise noted.

Comet **237P/Linear** – 237P's positions, by my estimates, are as follows: On May 15th – about 1° due south of the star **51 Aquilae**; on the 20th – about 1° due east and a touch north of **51 Aquilae**; on the 25th – about 2.1° northeast of **51 Aquilae**; and on the 30th – about 3.5° north-northeast of **51 Aquilae**.

Comet **C/2017 K2 (PANSTAARS)** – K2's positions are as follows: On May 1st – 04 40.8 -25 30.8, at magnitude 9.1 in **Eridanus**; on the 11th – 04 56.3 -22 05.2, at magnitude 9.3 in **Lepus**; on the 21st – 05 10.7 -19 10.8, at magnitude 9.5 in **Lepus**; and on the 31st – 05 24.0 -16 44.4, at magnitude 9.7 in **Lepus**.

Comet **C/2021 T4 (Lemmon)** – T4's positions are as follows: On May 1st – 00 40.1 -10 57.5, at magnitude 12.5 in **Cetus**; on the 11th – 00 42.4 -11 25.3, at magnitude 12.1 in **Cetus**; on the 21st – 00 43.8 -12 16.8, at magnitude 11.7 in **Cetus**; and on the 31st – 00 43.5 -13 44.3, at magnitude 11.2 in **Cetus**.

Meteor Showers – The meteor shower information comes from the *International Meteor Organization*.

There is only one **Major (Class I)** meteor shower active in May – the **Eta Aquarids**, active from April 15 through May 27th, peaks on May 5th with a maximum zenith hourly rate (mzhr) of 60.

There is only one **Minor (Class II)** meteor shower active in May- the **Eta Lyrids**, active from May 6th through May 15th, peaks on May 10th with a mzhr of 3.

There is only one **Variable (Class III)** meteor shower active in May – the **Tau Herculids**, active from May 19th through June 14th, peaks on June 3rd.

There are only three **Weak (Class IV)** meteor showers active in May – all have a mzhr of <2. The **Alpha Virginids**, active from April 6th through May 1st, peaked on April 18th; the **h-Virginids**, active from April 24th through May 4th, peaks on May 1st; and the **Daytime Arietids**, active from May 29th through June 17th, peaks on June 4th.

Mythology:

Centaurus – The Centaur

Centaur were mythical beasts, half-man, half-horse. They were a wild and ill-behaved race, particularly when the wine bottle was opened. But one centaur, Chiron, stood out from the rest as being wise and scholarly, and he is the one who is represented by the constellation Centaurus.

Chiron was born of different parents from the other centaurs, which accounts for his difference in character.

His father was Cronus, king of the Titans, who one day caught and seduced the sea nymph Philry. Surprised in the act by his wife Rhea, Cronus turned himself into a horse and galloped away, leaving Philry to bear the hybrid son.

Chiron grew up to be a skillful teacher of hunting, medicine, and music; his cave on Mount Pelion became a veritable academy for young princes in search of a good education. Chiron was so trusted by the gods and heroes of ancient Greece that he was made foster-father to Jason and Achilles; but perhaps his most successful pupil was Asclepius, son of Apollo, who became the greatest of all healers and is commemorated in the constellation Ophiuchus.

For a creature who did so much good during his lifetime, Chiron suffered a tragic death. It came from a visit paid by Heracles to the centaur Pholus, who entertained him to dinner and offered him wine from the centaur's communal jar. When the other centaurs realized their wine was being drunk, they burst angrily into the cave armed with roots and trees. Heracles repulsed them with a volley of arrows. Some of the centaurs took refuge with Chiron, who had been innocent of the attack, and an arrow of Heracles accidentally struck Chiron in the knee. Heracles, concerned for the good centaur, pulled out the arrow, apologizing profusely, but he already knew that Chiron was doomed. Even Chiron's best medicine was no match for the poison of the Hydra's blood in which Heracles had dipped his arrows.

Aching with pain, but unable to die because he was the immortal son of Cronus, Chiron retreated to his cave. Rather than let him suffer endlessly, Zeus agreed that Chiron should transfer his immortality to Prometheus. Thus released, Chiron died and was placed among the stars. Another version of the story simply says that Heracles visited Chiron and that while the two were examining his arrows, one accidentally dropped on the centaur's foot. In the sky, the centaur is represented as about to sacrifice an animal (the constellation Lupus) on the altar (the constellation Ara). Eratosthenes says that this is a sign of Chiron's virtue.

