Newsletter of the Baton Rouge Astronomical Society

Original Masthead of the Night Visions newsletter created by Craig Brenden in 1994 *(see page 9)*

Monthly Meeting December 11th at 7:00 PM, in person

This "in person only" meeting will not be available via meet.jit.si/BRASMeet

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

PRESENTATION: Christmas Party 2023, potluck, and election of officers

What's In This Issue?

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

The end of another year is upon us, and the last of my tenure as President of BRAS. We will have our annual Pot-Luck Dinner and elect new officers on December 11, 7 p.m. The proposed officers are as follows: President – Don Weinell; Vice President – Ben Toman; Secretary – Scott Cadwallader; and Treasurer – Trey Anding. Nominations (if you have any) are open until the actual vote is taken.

I have enjoyed these last two years as President of the Society. BRAS has accomplished a few goals during this time – hosting ALCon 2023 (the "big" goal) and increasing our membership – including young members. The only other goal I had was to get the Radio Telescope at HRPO operational again. That goal is still in progress.

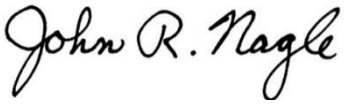
For 2024, Michele is stepping down as Night Visions editor. She has done a great and fantastic job. Scott Cadwallader has offered to take it on. Michele is currently also able to tweak the website as needed, but we need a permanent Webmaster and she recommends a more modern design (such as a floating menu aross the top that doesn't disappear). If you have any suggestions for this position, please let us know. Michele has also been able to make modifications to the BRAS forum, but we need a few dedicated moderators/admins for that task – if you would like to volunteer, please let us know.

The Pot-Luck Dinner will have the meat dish and drinks provided by BRAS. Each member should consider bringing a dish – side dishes can include salad, veggies, or desserts (one year half of what was brought was desserts – yummy). There will be elections and awards given.

The sad news is that one of the BRAS old-timers, Craig Brenden, and his wife will be moving out of Baton Rouge in 2024, to move closer to their daughter. Craig has been active in BRAS since he and Wally founded the club in 1981. We will miss Craig.

Both Michele and I will not be as active in BRAS this next year because we have purchased another house here in Baton Rouge and will be quite busy getting it into shape. That said, I want to find someone to take over as BRAS Observing Chair (I have held it since 2012); and the LPC Chair (for 2 years, then Chairman pro-tem for two years). I will not have the time to devote to these positions. Thank You BRAS for the opportunity you have given me in these positions.

Merry Christmas and a Happy New Year!
Clear Skies,



John Nagle, President!!!!!

Calendar of Upcoming Meetings

Monthly Member Meeting – 7 pm Monday, December 11th at the Observatory, in person and via Jitsi

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

Monthly Business Meeting: 7 pm Wednesday, December 27th at the Observatory, in person and via Jitsi

BRAS Star Party, TBA

Monthly Meeting Minutes – November 13th

- Welcome by the president, John Nagle.
- John introduced a former long-time member of BRAS, Walt Cooney, as a speaker for the evening. His topic was Cataclysmic Variable Stars: Supernovae, Novae, and Other Exploding Stars. This was an overview of the types, history, and anatomy of variable stars that blow up. When recurrent novae were discussed, Brad Schaefer got a mention as he is predicting that the variable T CrB will explode in the coming spring sometime. Walt also encouraged everyone to get involved in citizen science with AAVSO.
- John announced that the raffle for this evening included two books, a desk set from Craig, a human genome chart from Chris K., and a Saturn mug from Steven.
- John also announced that a second Kuiper belt may have been discovered further out at the edge of the solar system; he has an article about this in case anyone wants specific information.
- John bought one of the last of 15 classic Astroscan packages that Edmund Scientific produced; he says as of his last check there were 13 left if anyone wanted to purchase one.
- Ben discussed outreach (this is covered elsewhere in the newsletter).
- Chris Raby talked about his annular eclipse experience at the Western Heritage Museum in Hobbs, NM. He and Annette are also doing outreach in the Lafayette area.
- Chris was collecting money for the BRAS outreach T-shirts that will be delivered at the Christmas potluck in December.
- Trey announced that he has Astronomy calendars available for sale ($10 each); he is also generating invoices for next year's dues. Membership is still $20 for individuals with $5 for an extra family member.
- John mentioned that next month's meeting would be the Christmas potluck and elections. BRAS will provide the meat and the drinks. Everyone who attends is encouraged to bring a vegetable, salad, or side dish to share as we usually get plenty of desserts. Since all officers except for treasurer are term limited, we will have elections for new people to replace those currently serving. At this time, we have Don Weinell nominated for president, Ben Toman for vice-president, and Scott Cadwallader for secretary. Anyone else can be nominated or throw their hat in the ring up until the time of the election itself. Don spoke briefly about his experience in the club and noted that he anticipated being absent from next May through possibly September. He also mentioned that the Rockefeller Star Party was possibly coming back for the MLK holiday weekend in January. He will have more details at the December meeting.
- John talked about the background check that BREC does for volunteers. If you pass the check, there are opportunities to help out

Merry Christmas
&
Happy New Year

2023 Officers:

President: John Nagle
president@brastro.org
VP: Joel Tews
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:
Dr. Matthew Penny

Committees/Coordinators:
al_awards@brastro.org
Merrill Hess
lightpollution@brastro.org
Open
newsletter@brastro.org
Michele Fry
observing@brastro.org
John Nagle
outreach@brastro.org
Ben Toman
public_relations@brastro.org
Scott Cadwallader
webmaster@brastro.org
Open

at HRPO listed on the clipboard hanging on the back of the BRAS closet door. If you qualify, sign up there to let Chris K. know that you're available.

- Scott C. was awarded two certificates. One was for International Observe the Moon and the other one was the 2023 Solar Eclipse Special Observing Award – Silver Level Requirement.
- The raffle was held with coffee and cookies available for onsite attendees.

Submitted by Roz Readinger, Secretary

Business Meeting Minutes – November 29th

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

1. **Christmas Pot-Luck Dinner and Elections**. There was a discussion about what supplies would be needed for the dinner. A quick inventory turned up sufficient tableware and tablecloths for the occasion. We decided to go with shredded pork for the meat this year. Roz will supply the beverages and Scott C. will supply the ice. The initial slate of officers is set for the upcoming elections with Don running for president, Ben running for vice-president, and Scott C. running for secretary. Nominations for these positions will stay open up until the time voting occurs.
2. **Observing Programs** – check lists, descriptions, new programs. Chris K. was getting John some information on this. The basic setup is that each of these awards is supposed to be roughly 40% of a regular AL checklist with the idea that one can build on the local program to eventually get the regular AL award. John will get with Amy around the first of the year to see about designs for each award. The suggestion was made to rename the Beyond Polaris program to Up to Polaris. Also, the suggestion was made to engage members in the awards by opening up the end of the regular meetings to observation.
3. **Member's Handbook** – is it complete? Sending copies to membership and new members. This is complete. This is now waiting on new member information from Trey before being distributed to all members. The by-laws for the club will be stored online.
4. **Drop-out cylinders updat**e. Chris K. would like discussion of the cylinders removed from the agenda until BRAS delivers a response to BREC re the issue of losing the original cylinders.l Also that BRAS and LSU should issue separate responses. Scott C. will work with John on getting this correspondence set up. This should be done by the December meeting.
5. **Web master?** Michele can now get into everything she needs to update the website. The discussion on this broadened out to include the news that Michele wanted to move on from handling the newsletter duties; Scott C. volunteered to pick this up for the new year. There was then a discussion about the forums. A problem came to light recently when someone had to be kicked off. So we need to get a feel for the traffic through these forums, and find someone in the club to moderate them besides Chris K., who posts a lot to keep content interesting, but moderates only reluctantly until someone can be found. The suggestion was made to have two or three people stay on top of this. John will check with the members by the January meeting if not before, and we may need to shut this down if it's not really getting any use.
6. **Natural Sky Conference.** John was not able to attend due to a family emergency. Roz and Amy spoke with a few people and used Ben's lightbox for demonstrations. It was agreed that in the future we'll have a schedule set up for this program three months in advance. Chris K. is loaning his Mel's Diner model to the sample lighting display.
7. **BRAS Computer** – LPC Folder to be installed. There was a discussion about how best to do this. Ultimately the files will probably be combined in a folder and this will be copied into a drive on the BRAS computers. This moved into a discussion about the equipment purchases pending. We will need to figure out where the BRAS computer is going to be moved within HRPO before we can purchase cables. We also discussed not streaming the December meeting due to the potluck dinner. We

determined that the January meeting was going to a show-and-tell about the new astronomy gear that members received at Christmas.

8. **By-Laws amendment for Life-Time membership**. We currently have two types of honorary memberships but no life-time membership. After discussing this back and forth, we determined that we didn't need to add this to the by-laws.

New Items

1. There was an issue about a new membership that Chris K. had for Trey. Evidently there's a check that's hung up in the USPS. Someone else had a similar issue happening. Trey will wait a while longer to see if this correspondence turns up.
2. There are currently problems with entering volunteer hours on the BREC system. Evidently the software no longer works on this system. Chris K. said that his supervisor Claire let him know that the volunteer coordinator position is vacant; they are not sure exactly what is going on or when it will be fixed. Chris K. is telling the volunteers to keep entering time on the time sheets at HRPO.
3. John and Michele will close on a new house in a few days and will be busy for the next couple of months at least to move from where they are now.
4. Someone asked about business meeting times for next year. The business meeting for December will be held on Wednesday the 27th.
5. Because of the outreach at Port Hudson, there is the possibility of being able to stay overnight there for stargazing. Negotiations are ongoing, but we will wait for the new BRAS officers to be installed in January before deciding for sure.

Members attending this evening were John N., Joel T., Trey A., Scott C., Ben T., Chris K., Steven T., and Roz R.

Submitted by Roz Readinger, Secretary

LPC (Light Pollution Committee) Report November

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

1. Acquiring application to get an item (Light Pollution) on the agenda for a Planning Commission meeting. When acquired, will send a copy to Chris K. Chris to find out who the BREC representative is on the Planning Commission.
2. Chris has talked to DOTD and will follow-up on it.
3. BREC Park outreaches – awaiting a date from park supervisor(s).
4. Getting dates for the meetings of the Capital Area Regional Planning Commission. Will also investigate how to get on their agenda.
5. Natural Sky Conference.

New Item
There will be a folder created for the LPC on the BRAS Computer.

John Nagle, LPC Chair Pro-Tem

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Globe At Night

This month's target for the Globe At Night program is
Pegasus and Perseus from December 3rd through December 12

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.

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.

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• 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. **T**o 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 orJustin: **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

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Outreach Report for November 2023

Hi Everyone,

November was pretty much an off month for the most part. Both of our Sidewalk Astronomy events were upended by poor weather so now we'll look forward to making up for it in December.

By the time we finish with 2023, we will have participated in at least 26 Outreach events throughout the community. That doesn't even include any volunteering done at the Highland Road Park Observatory (e.g., International Astronomy Day, Spooky Spectrum, various meteor showers and general volunteerism on public nights) or ALCON. (ALCON alone had close to 20 club members volunteering their time throughout the conference that week.)

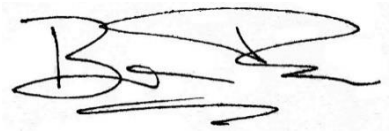
We can certainly be proud of the efforts we make to keep Astronomy and the night sky in the minds of everyone in our community. We're getting a great response from everyone that invites us to come out and those with which we interact. It's particularly nice to be told that we are considered a "highlight" of any event and that is happening more and more often.

None of this would be possible without the efforts of our volunteers. Including ALCON, we had so many this year that I don't know if I'll have enough Night Sky Network pins to go around! Like Santa, I'll be making my list and checking it twice to see who were our top contributors this past year. I'll have pins for you at the December meeting!

Now we look forward to 2024 and what it will bring. (Another awesome eclipse, for one!) As I always say, Outreach is a great way to have more fun experiences in this hobby that we all love. We had some great new faces in 2023 helping out and it would be fantastic to have even more in 2024. All you have to do is let me know which events you'd like to help out with and we'll go from there. No experience necessary. In fact, take a look at the short list below and if you're ready to jump in, just let me know!

Have a great Holiday and Happy New Year! See you all in 2024 if not sooner!!

Clear Skies,



Ben Toman

Upcoming Outreach Events

Friday, December 15th
6pm-9pm
Mid City Makers Market
2 volunteers needed for Sidewalk Astronomy
(We will probably limit this as the space is smaller in this return for the MMM)

Monday, December 19th
6pm-7:30pm
Ascension Parish Library Gonzales Sidewalk Astronomy
2 or more needed for telescope viewing

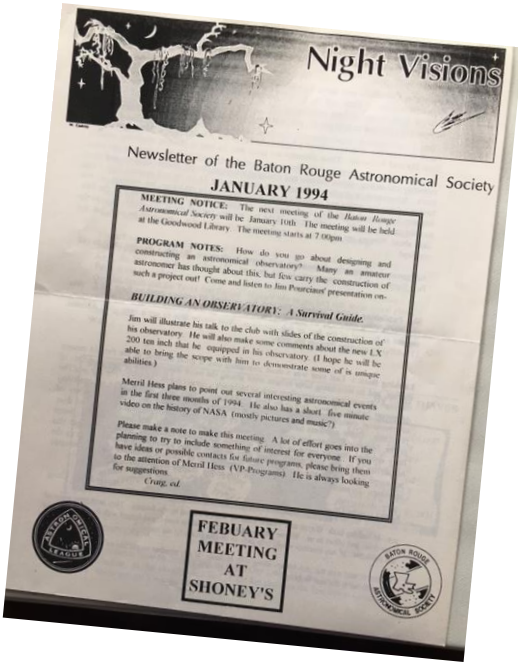
Tuesday, December 20th
6pm-9pm
Sidewalk Astronomy at Perkins Rowe
Telescope viewing

A Farewell Message from your Newsletter Editor

by Michele Fry

I took on the job of Newsletter Editor in April 2016 after my husband became President in January of that year, and have really enjoyed these nearly 7 years of watching BRAS reach out so effectively to our community and help HRPO in its mission to educate the public about astronomy. Both utilize our city's amazing observatory to full capacity, I think, another reason why I believe in this club wholeheartedly. I have enjoyed working alongside John as he persues his passion for astronomy. I've enjoyed searching for one new sky event to educate mysef about each month, using my writing and graphic skills to help document club history, astronomical events, and present BRAS to the public as the fun and active club that we are. BRAS is truly a valuable asset to the Baton Rouge and surrounding communities.

As John's second 2 year stint as President ends, I am stepping down as Editor, because we just bought a new house and we both have a year or more of hard work ahead of us getting moved, as well as rennovating our old house to either sell, lease or move back into. I've lived at Old Hammond Hideaway for 50 years, John for 23, so there are a lot of memories to pack up, and hopefully unpack some of them into Buckley Manor (in Parkview Oaks II, just off Stumberg Lane).


Night Visions

Newsletter of the Baton Rouge Astronomical Society

JANUARY 1994

MEETING NOTICE: The next meeting of the *Baton Rouge Astronomical Society* will be January 10th. The meeting will be held at the Goodwood Library. The meeting starts at 7:00pm

PROGRAM NOTES: How do you go about designing and constructing an astronomical observatory? Many an amateur astronomer has thought about this, but few carry the construction of such a project out! Come and listen to Jim Pourciaus' presentation on-

BUILDING AN OBSERVATORY: A Survival Guide.

Jim will illustrate his talk to the club with slides of the construction of his observatory. He will also make some comments about the new LX 200 ten inch that he equipped in his observatory. (I hope he will be able to bring the scope with him to demonstrate some of is unique abilities.)

Merril Hess plans to point out several interesting astronomical events in the first three months of 1994. He also has a short five minute video on the history of NASA (mostly pictures and music!)

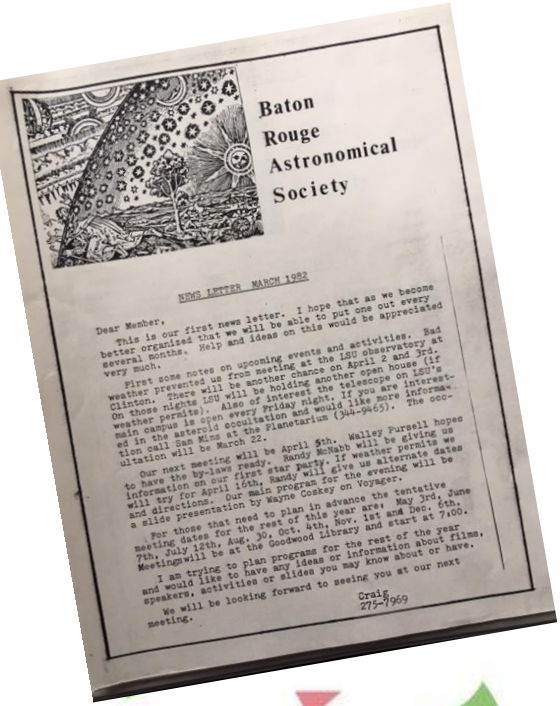
Please make a note to make this meeting. A lot of effort goes into the planning to try to include something of interest for everyone. If you have ideas or possible contacts for future programs, please bring them to the attention of Merril Hess (VP-Programs). He is always looking for suggestions.

Craig, ed.

FEBUARY MEETING AT SHONEY'S

As an homage to Craig Brenden, our first newsletter editor since it began in 1982, and to fulfill a promise I made to him awhile back, I am using for the masthead of my last issue, a colorized version of the masthead that he designed, which first appeared in the January 1994 Night Visions. Below is also a copy of the very first issue of Night Visions, dated March 1982.

John believes he has scraped together every issue, and as time permits, we'll be working to create an index of every issue since its inception. Also, I've volunteered to get the newsletters scanned in for preservation at the Baton Rouge Library.


Baton Rouge Astronomical Society

NEWS LETTER MARCH 1982

Dear Member,

This is our first news letter. I hope that as we become better organized that we will be able to put one out every several months. Help and ideas on this would be appreciated very much.

First some notes on upcoming events and activities. Bad weather prevented us from meeting at the LSU observatory at Clinton. There will be another chance on April 2 and 3rd. On those nights LSU will be holding another open house (if weather permits). Also of interest the telescope on LSU's main campus is open every Friday night, if you are interested in the asteroid occultation and would like more information call Sam Mims at the Planetarium (344-9465). The occultation will be March 22.

Our next meeting will be April 5th. Walley Fursell hopes to have the by-laws ready. Randy McNabb will be giving us information on our first star party. We will give us alternate dates and directions. Our main program for the evening will be a slide presentation by Wayne Cosky on Voyager.

For those that need to plan in advance the tentative meeting dates for the rest of this year are: May 3rd, June 7th, July 12th, Aug. 30, Oct. 4th, Nov. 1st and Dec. 6th. Meetingswill be at the Goodwood Library and start at 7:00.

I am trying to plan programs for the rest of the year and would like to have any ideas or information about films, speakers, activities or slides you may know about or have.

We will be looking forward to seeing you at our next meeting.

Craig
275-7969

It's been a pleasure working with such dedicated people, especially stepping into Ben Toman's shoes as the previous editor, who has encourged and helped me every step of the way to make this fun and interesting. Our lineage of editors is very short, by the way:-

Craig Brenden- March 1982 – September 2011
Geoff Michelli- October 2011 – July 2013
Ben Toman - August 2013 – March 2016
Michele Fry- April 2016 – December 2023

I won't be going far away, and look forward to the next iteration of Night Visions. I hope we'll have another crawfish boil when John and I get our new back yard spiffed up enough to invite company over.

Best wishes, clear skies, and ***Happy New Year to all.***

Michele Fry

Messages from HRPO

Highland Road Park Observatory

The facility is closed on 24, 25 and 26 December.

FRIDAY NIGHT LECTURE SERIES

7:30pm / for ages fourteen and older / no admission fee

1 December = "The Sun-Earth-Moon Connection" Solar Cycle 25 is predicted to peak in 2024. Debates on how to take care of our home planet continue. The Artemis program is returning human beings to the Moon.

8 December = "Wonders of the Winter Sky" BREC Education Curator Amy Northrop will take the audience on a fascinating tour of Baton Rouge's upcoming winter season. She'll highlight the celestial gems that will sparkle throughout those three months—gems visitors will be able to see live if they continue to visit HRPO!

15 December = "Apollo 8 55th Anniversary" For the first time, people would be launched from Earth atop the enormous Saturn V. And for the first time, people would travel around the Moon. Former HRPO Center Supervisor Tom Northrop recounts the thrilling challenge and the exploits of the brave crew—Borman, Lovell and Anders—for the historic anniversary of a historic flight.

22 December = "Reclaiming Your Night Sky" From your homestead—a standalone house, apartment, trailer, condo, duplex or what have you—a wealth of objects and events awaits you. Some require a binocular or a telescope, some can be seen with the unaided eye. BREC Center Supervisor James DeOliveira will outline a fullproof plan to make your neighborhood as sky-viewing friendly as possible.

EVENING SKY VIEWING

for ages six and older / no admission fee

Fridays (1, 8, 15 and 22 November from 8:30pm to 10pm)

Saturdays (2, 9, 16, 23 and 30 December) 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.

2 December = "Orion's Neighborhood"
9 December = "The Gemini Program"
16 December = "The Apollo Program"
30 December = "Rocket Design"

MERCURIAN ELONGATION

Sunday 3 December from 4:30pm to 6pm
for ages six and older / no admission fee

Periodically Mercury reaches its greatest angular separation in the sky (elongation) from the Sun. This is the safest way to view Mercury by amateurs. Come join us at the Burbank Soccer Complex! The planet will appear as a "half-Mercury".

GEMINID METEOR SHOWER

Wednesday 13 December from 9pm to 1am
for ages six and older / no admission fee

The Geminid meteors, in addition to being part of one of the most reliable showers of the year, are quite intriguing and were first noticed in the 1860s. For this one night the public is welcome to join us for sky viewing. Due to the light pollution problem here in East Baton Rouge Parish, it is feasible to attempt viewing of this major shower only during its peak time. The waxing gibbous Moon will be up. Patrons must follow the rules and regulations below if they expect to stay on park property.

AMATEUR ASTRONOMY COURSES

Saturdays from 3pm to 7pm
Registrants must be aged eighteen or older / $15 per in-parish registrant; $18 per out-of-parish registrant

These exciting one-day classes are tailor-made to instruct the patron in the use of a personal telescope or binocular for skygazing, or the basics of the unaided-eye Baton Rouge sky. Sign up for one or more!

Learn Your Sky [16 December]

This class is an introduction to the unaided-eye Baton Rouge sky. We'll even go outside for some practice, weather permitting. Also included will be an overview of all major sky events for the next twelve months. This one-day course focuses specifically on the unaided-eye Baton Rouge sky. Limit thirty registrants. All registrants must be over eighteen; children are not allowed. Three adults needed for registration by 13 December.

Learn Your Binocular [6 January]

This class is a hands-on introduction to the operations of your personal binocular. We'll even take it outside for some practice, weather permitting. Also included will be an overview of all major sky events for the next twelve months. Up to four household members over the age of eight are encouraged to attend, though the registrant for this course must be over eighteen. Please bring all parts and accessories belonging to the binocular, including the instruction manual. This one-day course focuses specifically on binocular views of the Baton Rouge sky. Limit twenty registrants. Limit one binocular per registrant. Deadline for registration is 3 January; two households needed.

Learn Your Telescope [20 January]

This class is a hands-on introduction to the operations of your personal telescope. We'll even take it outside for some practice with the waxing gibbous Moon, weather permitting. Also included will be an overview of all major sky events for the next twelve months. Up to four household members over the age of eight are encouraged to attend, though the registrant for this course must be over eighteen. Please bring all parts and accessories belonging to the telescope, including the instruction manual. This one-day course focuses specifically on telescopic views of the Baton Rouge sky. Limit ten registrants. Limit one telescope per registrant. Deadline for registration is 17 January.

SOLAR VIEWING

Saturday 23 December from 12pm to 2pm
for ages six and older / no admission fee

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: "HISTORY OF CELESTIAL OBSERVATIONS"

Saturday 23 December 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.

WINTER SPACE EXPLORATION CAMP

Wednesday 27 December and Thursday 28 December (8am to 5pm daily)
for ages nine to thirteen / $55 per Camper for both days ($66 if from outside EBR Parish) / registration via WebTrac [activity #531180]

Campers will build and fly a single-stage chemical rocket, while learning about the upcoming missions to the Moon and Mars, and the lastest news about the Psyche mission!

OBSERVING NOTES DECEMBER 2023

Carina – The Keel

Position: RA 10 44, Dec. -63°57

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.

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Named Stars

Canopus (Alpha Car), also known as "Suhel," "janüb," and "Menelaus's Helmsman," mag. -0.72, 06 23 57.09 -52 41 44.6, is a white supergiant star and the second brightest star in our night sky. It is a variable star and a strong source of X-rays. Its age (about 40 million years old) and its great mass indicate that it has ceased fusing hydrogen at its core and is probably burning helium in a shell around an inert core. **Canopus** has been used for navigation by many cultures and is also used in space navigation to adjust the position of spacecraft in space. Also known as **HD 45348**, **HIP 30438**, **HR 2326**, **GC 8302**, **Gould 7 Carinae**, **SAO 234480**, and **IRAS 06228-5240**.

Miapiacidus (Beta Car), "placid waters," mag. 1.67, 09 13 12.24 -69 43 02.9, is a blue-white giant star that is 260 million years old, indicating that it has already exited the main sequence and is fusing helium to carbon in its core. It is also a high proper motion star – 156.47 milli-arcseconds per year in RA (Right Ascension) and 109 milli-arcseconds per year in Declination (Dec.). The star is also a rapid rotator, spinning at a velocity of 145 km per second. Also known as **HD 80007**, **HIP 45238**, **HR 3685**, **CD-69 600**, **GC 12764**, **Gould 123 Carinae**, **SAO 250495**, and **IRAS 09126-6930**.

Avior (Epsilon Car), mag. 1.86, 08 22 30.86 -59 30 34.3, is a spectroscopic binary star. One component is an orange giant star (approaching the end of its life), and a hot hydrogen fusing blue dwarf star, with a separation of 4 WDS au. The two components regulary eclipse each other every 785 days. There is a possibility that there is another star in the system. Also known as **HD 71129**, **HIP 41037**, **HR 3307**, **GC 11463**, **GSC 08579-02692**, **Gould 89 Carinae**, **SAO 235937**, **WDS J08225-5931AB**, and **IRAS 08214-5920**.

Foramen (Eta Car), also called "Tseen She," mag. 4.47, 10 45 03.60 -59 41 03.0, is a binary star, with the primary being a luminous blue variable star – one of the most luminous and massive stars known (90 solar masses). The star is completely surrounded by the **Homunculus Nebula** and is in the **Eta Carina Nebula** (**NGC 3372**). The star formed in the rich cluster **Trumpler 16**. The companion star, **Eta Carinae B**, is thought to be a massive star (about 30 solar masses) and has an orbital period of 2,024 days. Also known as **HD 93308**, **CD-59 3306**, **GC 14799**, **HR 4210**, **Gould 231 Carinae**, **SAO 238429**, **He3-481**, **Wray 15-640**, **WDS J10451-5941**, **IRAS 10431-5925**, **Tr 16 183**, and **AAVSO 1041-59**.

Aspidiske (Iota Car), also called "Turais" and "Scutulum," all diminutives of the word "shield" in Greek, Arabic, and Latin, mag. 2.23, 09 17 05.43 -59 16 30.9, isa rare white supergiant star with a luminosity of 4,900 times the Sun. Also known as **HD 45556**, **HIP 45556**, **CD-58 2529**, **GC 12831**,

GSC 08595-03312, **HR 3699**, **Gould 127 Carinae**, **SAO 236808**, and **IRAS 09157-5903**.
Tapecue (HD 63765), mag. 8.10, 07 47 49.72 -54 15 50.9, has one planet in orbit. Also known as **HIP 38041**, **CD-53 2007**, and **SAO 235521**.
Innes' Star, mag. 11.52, 11 16 00.21 -57 32 51.6, has one planet in orbit. Also known as **HD 304043** and **HIP 55042**.

Deep Sky:

IC 2602, "Southern Pleiades", "Theta Carina Cluster", mag. 1.6, 10 42 27 -64 25 34, 173.9"x173.9" in size, 60 stars; detached, weak concentration of stars; large range in brightness; very large, moderately bright; magnitude of brightest star is 2.8. Located 4.5° south of the **Eta Carina Nebula** (**NGC 3372**). The small, hazy patch among the stars in the southern part of the cluster is the **Melotte 101 Cluster**. Also known as **Cr 229**, **Mel 102**, **Raab 87**, **Mrk 20**, **C 102**, **vdB-Ha 103**,
NGC 3532, "Wishing Well Cluster", mag. 3.0, 11 05 40.1 -58 42 25, 64.3'x64.3' in size, 667 stars; is an open cluster that is detached, weak concentration of stars; small range in brightness; magnitude of brightest star is 7.1; extremely large, round. Located about 2.4° east-northeast of the **Eta Carina Nebula** (**NGC 3372**). Also known as "**Firefly Party Cluster**," "**Football Cluster**," "**Fish Cluster**," **Cr 238**, **Mel 103**, **C1104-584**, **vdB-Ha 109**, **OCl 835.0**, **Raab 88**, **Caldwell 91**, **Δ (Dunlop) 323**, and **Lund 574**.
NGC 2516, "Southern Beehive Cluster", mag. 3.8, 07 58 06.5 -60 48 00, 59.5'x59.5' in size, 103 stars, is an open cluster; detached, strong concentration of stars; large range in brightness; very bright, very large; magnitude of brightest star is photo 7.0. Located 3.3° west-southwest of Epsilon Carinae. Also known as **Cr 172**, **Mel 82**, **C(aldwell) 96**, **Raab 69**, **C0757-607**, **OCl 776.0**, and the "**Diamond Cluster**".
Cr 240, mag. 3.9, 11 11 40.0 -60 18 35.0, 32'x23' in size, 30 stars; detached, weak concentration of stars; small brightness range; involved in nebulosity; magnitude of brightest star is 4.6. Comprised of **Ho 10** and **Ho 11**, partially within **NGC 3572a**. Also known as **OCl 848.0** and **C1109-600**.
NGC 3114, "Hand Cluster, mag. 4.2, 10 02 12.70 -60 02 28, 49.2'x49.2' in size; detached, weak concentration of stars; large range in brightness; magnitude of brightest star is 7.3; extremely large. Tr 12 is 30' to the east, and **Iota Carinae** is 5.8° to the west. Also known as **Cr 215**, **Mel 98**, **Raab 84**, **Δ 297**, **OCl 802.0**, **Lund 571**, **vdB-Ha 86**, and **C1001-598**.
IC 2581, mag. 4.3, 10 27 28.1 -57 37 34, 7.1'x7.1' in size, 398 stars, is dominated by a luminous supergiant star (**HD 90772**). **NGC 3247** is 22' to the southwest, and 28' to the west-southwest is **We(sterlund) 2** and **Gum 29**. Also known as **Cr 222**, **vdB-Ha 97**, **Lund 545**, **OCl 811.0**, and **C1025-573**.
Cr228, mag. 4.4, 10 44 00.0 -60 05 12, 15' in size, 98 stars, is an open cluster; magnitude of brightest star is 6.3. Located within the **Eta Carina Nebula** (**NGC 3372**). Also known as **Lund 555**, **OCl 828.0**, and **C1041-597**.
Fei(nstein) 1, mag. 4.7, 11 06 43.2 -59 49 12, 25' in size, 40 stars. Also known as Lund 573, C1103-595, and IRAS 11038-5932.
NGC 3293, "Gem Cluster", mag. 4.7, 10 35 32.8 -58 18 52, 13'x13' in size, 93 stars; detached, strong concentration of stars; large range in brightness; magnitude of brightest star is 6.5. It has a large population of short-period **Beta Cephei** stars – 11 at last count. Located 23' southwest is **Ru 90**, 27' to the south-southeast is **NGC 3324**, **Lo 153** is to the northwest. Also known as **Cr 224**, **Mel 100**, **Gum 30**, **Raab 85**, **Mrk 19**, **vdB-Ha 98**, **Δ 321**, **Lund 551**, **OCl 816.0**, **RCW 51**, **BRAN 316C**, and **C1033-579**.
NGC 3372, "Eta Carina Nebula", mag. 4.8, 10 45 02.23 -59 41 59.8, 120'x120' in size, is an emission nebula in an H II region surrounding **Eta Carinae** (a blue O-type supergiant star – one of the most luminous stars known_) and a hot companion star (**HD 93129A** – mag. 7.31). The H II region is about 300 ly wide. Contained within the nebula is what is called the "**Keyhole Nebula**" – a small dark cloud of dust and cold molecules with bright filaments and fluorescent gas that is about 7 ly wide. The **Keyhole** has its own designation of **NGC 3324**. A bipolar nebula, called the **Homunculas** (Latin for

"**Little Man**") immediately surrounds **Eta Carinae**. It is a planetary nebula from the 1843 explosion of the star and is also known as "**Nova Carinae**". A smaller bipolar nebula is nestled within the **Homunculus** called the "**Little Homunculus**" that came from the lesser explosion of 1890. The **Eta Carina Nebula** has nearly 100 O-class stars in it and may contain between 50 to 100 thousand young stars. It has 6 neutron star candidates, the radio source **Car 1** (in **Tr 14**), **Car 2** is the **Keyhole Nebula**. **Tr 16** has at least 6 optical clusters with 1,000 to 1,300 stars estimated within it; **Tr 14** and **Bo 11** are 0.5° south of **Eta Carinae**, in the southeast part of the nebula and has at least 6 known O-type stars estimated to be within it. **Tr 14** has at least 10 known O-type stars and is an arc-shaped nebulosity. **Tr 15** has 6 known O-type stars. **Cr 232** is located 3' to the southeast of **Tr 14**, and **Bo 11** is 0.5° south of **Eta Carinae** in the southeast part of the nebula complex and has at least 5 O-type stars in it. A new star cluster, called the "**Treasure Chest**" is located 20' southwest of the **Keyhole Nebula**. Also known as **BRAN 316A**, **Gum 33**, **Δ 309**, **Lund 1098**, **RCW 53**, **1E 1044.0-5940**, **Caldwell 92**, and the "**Carina Nebula**".

Tr 16, mag. 5.0, 10 45 00.7 -59 42 00, 7.3'x7.3' in size, 90 stars. Located in the **Eta Carina Cluster**. It contains **Cr 233**, **Cr 234**, **Mrk 23**, and **vdB-Ha 105**. **Cr 234** is just the southern part of the main cluster; the ID of **Cr234** with **Cr 233** should be removed, and a separate entry added for **Cr 234**, noting that it is part of **Tr 16=Cr 233**. X-ray surveys have identified 8 star clusters of large young stars in **Tr16**. Located 9' north of the center of **NGC 3372** (**Eta Carina Nebula**), with **Cr 232** being 9' north-northwest of **Tr 16**. **Tr 14** is 13' to the northwest and **Tr 15** is 21' to the north. **Cr 228** is 18' to the south-southeast, with **Bo 11** being 28' to the southeast. Also known as **vdB-Ha 105**, **OCl 829**, **Lund 560**, and **C1043-594**.

IC 2599, mag. 5.4, 10 37 42.0 -58 39 00, 20'x20' in size, is a nebula with the star HD 092207 (V370 Carinae) in the center. Also known as Ced 108 and Gum 31.

Tr 14, mag. 5.5, 10 43 56.6 -59 33 11, 5.3'x5.3' in size, 44 stars, contains 10 known O-type stars, and is a bow-shaped nebulosity – a bow shock wave. Also known as "**The Sickle**," **vdB-Ha 102**, **Cr 230**, **Mrk 21**, **Lund 557**, and **C1041-593**.

Bochum 10, mag. 6.2, 10 42 14.2 -59 08 44. Is an open cluster also known as C1040-588.

NGC 2808, mag. 6.2, 09 12 03.10 -64 51 48.6, 13.8'x13.8' in size, is a globular cluster that is very large and has a high concentration of stars. It contains 3 separate stellar populations, The core, studied under near and far ultraviolet, and X-rays, has yielded a number of high energy sources, including 40 white dwarf stars, 60 cataclysmic variable stars, 60 blue straggler stars, and at least 113 X-ray sources. Due to the dense environment at its core, which contains thousands of stars per cubic parsec, it has been considered as a likely environment for harboring an intermediate-mass black hole, although no such object has emerged yet. There may be, instead of a black hole of several hundred solar masses, several hundred 10 solar mass black holes inhabiting the core of **NGC 2808**. Located 3.7° west of **Upsilon Carinae**, and 5.7° south of **Iota Carinae**. Also known as **HD 79627**, **HR 3671**, **GCl 13**, **IRAS 09110-6439**, and **C0911-645**.

Bochum 9, mag. 6.3, 10 35 45.7 -60 07 34.0, 16' in size, 30 stars. Also known as **Lund 1146** and **C1033-598**.

NGC 3572, mag. 6.6, 11 10 33.6 -60 17 38, 8.9'x8.9' in size, 35 stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 7.9; involved in a faint, large (20") emission nebula. Part of **Cr 240** is in **NGC 3572b**, **Hogg 9** is 9' to the south-southeast, **Hogg 11** is 18' to the southeast, and **Tr 18** is 27' to the south-southeast. Also known as **Cr 239**, **vdB-Ha 112**, **Lund 575**, **NGC 3572b**, **Gum 37**, and **RCW 54**.

NGC 3324, "Keyhole Nebula", mag.6.7, 10 37 21.8 -58 36 543, 11'x11' in size, is a large, bright emission nebula containing a small (6') open cluster (Cr 225); detached, strong concentration of stars; large range in brightness; magnitude of brightest star is 8.2; pretty bright, large. Located within **NGC 3372** (**The Eta Carina Nebula**). Also known as **Cr 225**, **Gum 31**, **Lund 108**, **C1035-583**, **OCl 819**, **OCl 819.0**.

Cr 232, mag. 6.8, 10 44 17 -59 34 00, 4' in size, 15 stars. Located 6' east of **Tr 14.** Also known as **Lund 559**.

Tr 18, mag. 6.9, 11 18.7 -60 39 22, 8.3'x8.3' in size, 30 stars; detached, no concentration of stars; moderate range in brightness. NGC 3572 is 27' to the north-northwest, **Hogg 12** is 18' to the southeast, **Hogg 10** is 10' to the north, **NGC 3590** is 13' to southeast, and **Cr 240** is 21' to the north. Also known as **Cr 241**, **vdB-Ha 113**, **Lund 578**, **OCl 850.0**, and **C1109-604**.
vdB-Ha 113, mag. 6.9, 11 11 24 -60 40 03, 12' in size. Also known as **Cr241**, **Tr 18**, **OCl 850**, and **Lund 578**.
IC 2220, "Toby Jug Nebula", "Butterfly Nebula", mag. 7.0, 07 56 57.3 -59 07 31, 6'x4' in size, is a reflection nebula illuminated from within by the magnitude 6.2 star **HD 65750** (**V341 Carinae**). The nebula has been created by mass loss from this evolved star. Also known as AM 0755-585, **GN 07.559**, and **ESO 124-003**.
Stock 13, mag. 7.0, 11 13 05.0 -58 53, 5' in size, 23 stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 8.5; involved in nebulosity. Also known as **OCl 845**, **Lund 582**, and **C1110-586**.
Tr 15, "Octopus Nebula", mag. 7.0, 10 44 42.5 -60 08 31, 5.4'x5.4' in size, 39 stars; detached, no concentration of stars; moderate range in brightness; magnitude of brightest star is 8.4; involved in nebulosity. Has about a half-dozen O-type stars. Located in the **Eta Carina Nebula** (**NGC 3372**). Also known as **Cr231**, **Mrk 22**, **vdB-Ha 104, Lund 558**, **OCl 825.0**, **C1042-591**, and **1E 1042.6-5909**.
Hogg 10, mag. 7.1, 11 10 39.1 -60 23 06.1, 3.8'x3.8' in size. Also known as **OCl 954.0**, **OCl 847**, **LEDA 1309**, **Lund 576**, and **C1108-601**.
NGC 3247, mag. 7.6, 10 25 57.6 -57 53 37, 7' in size, 25 stars; detached, weak concentration of stars; moderate brightness range; magnitude of brightest star is 10.0; involved in nebulosity. **Westerlund 2** is located in the western extent of **RCW 49** (also known as **Gum 29**), and contains about 3,000 stars, including the Wolf-Rayet stars **WR20a** and **WR20b** – **Wr20a** is the most massive WR binary system known. Also known as **We(sterlund) 2**, **Cr 220** (incorrectly identified), **ESO 127-018**, **GC 2106**, **vdB-Ha 95**, **Gum 29**, **RCW 49**, **BRAN 300b**, **OCl 809.0**, and **C1024-576**.
Basel 17, mag. 7.7,11 10 36.0 -59 02 49, 10.9'x10.9' in size, 20 stars. There are three stars near the center of the **Basel 17** area (**Loden's** stars **11**, **13**, and **19**) with the southeastern star taken as the center of the cluster. The brightest star in the cluster is the **Loden 11** star. Also known as **C1108-587**, **Lund 1174**, and **Loden 282**.
Cr 236, mag. 7.7, 10 57 21.6 -61 07 02, 7' in size, 30 stars; detached, no concentration of stars; moderate range in brightness. Also known as **BRAN 333**, **OCl 835.0**, and **C1055-607**.
NGC 3519, mag. 7.7, 11 04 08.9 -61 22 19, 8.9'x8.9' in size, 50 stars; detached, no concentration of stars; moderate brightness range; magnitude of brightest star is 8.9. Also known as **Ru 93**, **h 3314**, **Lund 571**, **OCl 844.0,** and **ESO 128-030**.
RCW 58, mag. 7.7, 11 06 17.2 -65 30 35.24. Also known as **HD 96548**, **HIP 54283**, **CD-64 520**, **BRAN 340**, **GC 15280**, **GSC 08966-01467**, **SAO 251264**, **He3-576**, **IRAS 11043-6514**, **Wray 15-733**, and **AAVSO 1102-64**.
Bochum 11, mag. 7.9, 10 47 15.2 -60 05 51, 22' in size, 20 stars. Located in the southeast part of the **Eta Carina Complex**, in a region known as the "**Southern Pillars"** 0.5° south of **Eta Carinae** and contains at least 5 O-type stars. Also known as **C1045-598**.
Mel 101, mag. 8.0, 10 42 08.4 -65 06 36, 16.3'x16.3' in size, 70 stars; detached, weak concentration of stars; large range in brightness; magnitude of brightest star is 9.7. Located 0.5° south-southwest of **IC 2602** (**The Southern Pleiades**), on its southern margin. Also known as **Cr227**, **Lund 554**, **Raab 86**, **vdB-Ha 101**, **Δ 258**, and **C1040-648**.
Hogg 11, mag. 8.1, 11 11 32.0 -60 22 19, 2' in size, 10 stars, is part of **Cr 240** – directly south of the center. The center star is **HD 97381** (magnitude 8.3). Also known as **Lund 579**, **ESO 129-006**, **OCl 849**, and **C1109-601**.
Tr 11, mag. 8.1, 10 04 59.5 -61 37 08, 6.8'x6.8' in size, 15 stars. **Cr 216** is a part of **Tr 11**. Also known as **OCl 808** and **C1003-613**.
IC 2714, mag. 8.2, 11 17 29.5 -62 n43 08, 20.5'x20.5' in size, 120 stars; detached, weak concentration of stars; large range in brightness; large cluster; magnitude of brightest star is photo 10.0. Located 49'

to the north of **Mel 105**. Also known as **Cr 245**, **Mel 104**, **Lund 586**, **Raab 89**, **vdB-Ha 116**, **Δ 281**, and **C1115-624**.

NGC 3496, mag. 8.2, 10 59 30.5 -60 20 06, 11.2'x11.2' in size, 110 stars; detached, no concentration of stars; small brightness range; magnitude of brightest star is 11.8. **Sher 1** is located 12' to the northeast. Also known as **Cr 237**, **vdB-Ha 108**, **Lund 568**, and **C1057-600**.

NGC 3590, mag. 8.2, 11 13 02.9 -60 47 24, 4.1'x4.1' in size, 30 stars; detached, weak concentration of stars; small range in brightness; magnitude of brightest star is 10.3; slightly elongated. **Hogg 12** is 5' to the west-southwest, **Tr 18** is 13' to the northwest, **Hogg 11** is 25' to the north-northwest, **Hogg 10** is 28' to the northwest, and **Cr 240** is 30' to the north-northwest. Also known as **Cr 242**, **Mrk 24**, **vdB-Ha 114**, **Lund 581**, **OCl 852**, and **C1110-605**.

Mel 105, mag. 8.3, 11 19 40.8 -63 29 10, 6.5'x6.5' in size, 73 stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 11.1. Also known as **vdB-Ha 117**, **OCl 856**, **Lund 587**, **Cr 246**, and **C1117-632.**

Tr 17, mag. 8.4, 10 56 24 -59 12, 5' in size, 44 stars, magnitude of brightest star is 10.3. Located 33' southeast of the star **U Carinae**. **Hoffiet 38** is 18' to the west-northwest, 19' to the northwest is **Hogg 9**, and **Turner 6** is 27' to the southeast. Also known as **Cr 235**, **vdB-Ha 107**, and **Lund 565**.

vdB-Ha 107, mag. 8.5, 10 56 12 -59 13 00, 5' in size. Also known as **Tr 17**, **Δ 310**, **Cr 235**, **OCl 831**, and **Lund 565**. Also known as **Cr 246**, **Lund 587**, **Raab 90**, **vdB-Ha 117**, **Bennett 47**, **Δ 271**, and **C1117-632**.

vdB-Ha 117, mag. 8.5, 11 19 42 -63 29 00, 4' in size. Also known as Mel 105, Δ 271, Raab 90, Cr 246, OCl 856, and Lund 587.

Ru 92, mag. 8.6, 10 53 47 -61 45 00, 8' in size, 50 stars; detached, strong concentration of stars; large range in brightness; magnitude of brightest star is 10.9. **Bo 12** is 25' to the east. Also known as **Lund 564** and **C1051-614**.

Hogg 12, mag. 8.8, 11 12 20 -60 45 18, 3.8'x3.8' in size, 11 stars. **NGC 3590** is 5' to the east and **Tr 18** is 8' to the northwest. Also known as **ESO 129-011**, **Lund 580**, **OCl 851.0**, and **C1110-604**.

Sher 1, mag. 8.8, 11 01 03 -60 14 00, 1' in size, 11 stars. Also known as **OCl 837**, **Lund 569**, and **C1058-601**.

Tr 12, mag. 8.8, 10 06 59 -60 17 24, 5.9'x5.9' in size, 12 stars. **Hogg 5** is 4' to the south, **Hogg 6** is 11' to the south, and **NGC 3114** (**Hand Cluster**) is 30' to the west-northwest. Also known as **Cr 217**, **vdB-Ha 89**, **Lund 534**, and **C1004-600**.

NGC 3603, mag. 9.1, 11 15 10.8 -61 57 32, 4.1'x4.1' in size, forms one of three knots with nebulae **NGC 3576** and **NGC 3579**. They are part of a huge H II region that contains **NGCs 3576**, **3579**, **3581**, **3582, 3584**, **3586**, and **3603**. All except **NGC 3603** are treated as the "**NGC 3576 Complex**", or **RCW 57A**. **NGCs 3576**, **3579**, and **3581** are called the "**Little Tarantula Nebula**". The nebulosity of **NGC 3603** is among the largest and most massive H II regions in the galaxy. The central ionizing stars can be observed visually, though heavily reddened by about 4 magnitudes of foreground extinction due to dust. The central star cluster of **NGC 3603's** core are hydrogen-rich Wolf-Rayet stars with enhanced nitrogen. One of these stars, identified as **A1**, is a known double-lined spectroscopic eclipsing binary system (SB2), with a period of 3.77 days. Star **B** is single, and star **C** is also a binary in which only the primary component is visible spectroscopically (making it a single-lined or SB1 binary). Its period is 8.9 days. Inside the nebula, far infra-red has revealed 107 embedded point sources, and some 35 of these sources are most likely young stellar objects in very early evolutionary phases, with ages around 3,200 years. Infra-red counterpoints were **.63-00.54**, and **C1112-609**.also observed for 4 water masers and 11 other objects previously mapped in infra-red. Also known as **Gum 38b**, **RCW 57B**, **Cr 244**, **Lund 584**, **vdB-Ha 115, BRAN 348B**, **[FSR 2007] 1576**, and **GAL 291.**

Cr 223, mag. 9.4, 10 32 16 -60 01 12, 9' in size, 35 stars, has "straight star chains" which are visible on the south side of the cluster. Also known as Lund 549 and **C1028-595**.

NGC 3503, mag. 9.3, 11 01 15.9 -59 50 39, 1'x 1.5' in size, 9 stars. Also known as **vdB-Ha 46**, **Pi 17**, **Lund 570, BRAN 335**, **ESO 128-028**, **GAL 289.5+00.1**, and **RCW 54**.

Tr 19, mag. 9.6, 11 14 29.5 -57 33 47, 12.6'x12.6' in size, 40 stars. Also known as **Cr 243**, **I 13**,

Lund 583, **OCl 843.0,** and **C1112-573**.
Bochum 12, mag. 9.7, 10 57 23.0 -61 44 06, 10' in size, 20 stars. Also known as **Lund 1136** and **C1053-614**.
NGC 2867, mag. 9.7, 09 21 25.38 -58 18 40.62, 0.25'x0.25' in size, is a planetary nebula with a Wolf-Rayet star at magnitude 16.6. The spectrum obtained of the WR star reveals more than 80 emission lines, including high excitation species of helium, carbon, nitrogen, oxygen, iron, silicon, neon, argon, magnesium, sulfur, and aluminum. Emission lines identified as O VII and O VIII, in previous optical and ultraviolet spectra have since been attributed to Ne II and Ne III. The stellar outflow is upwards of 2,000 km per second, and an effective temperature of 165,000 Kelvin.
Carina Dwarf Galaxy, mag. 11.0, 06 41 36.39 -50 57 58.3, 23'x15'in size. Also known as **ESO 206-020A**, **ESO 064024-5055**, **AM 0640-505**, **SGC 064024-5055.0**, and **PGC 19441**.
Argo Dwarf Galaxy, mag. 14.5, 07 05 38 -58 32 50, 3.2'x1.5' in size. Also known as **PGC 20125**.
Treasure Chest Cluster is a newly formed star cluster dominated by a 9th magnitude star **CPD-59 2661**. The cluster is less than 100,000 years old. Located in one of the southern pillars of the **Eta Carina Nebula**, 0.5° south of Eta carinae, and 20' south of the **Keyhole Nebula** (**NGC 3324**), in **Bochum 11**.
Graham 1, 10 56 32.2 -63 01 05, 3.4'x3.4' in size. Also known as **Graham Cluster**.
Tully Carina Cloud (33), is a large "cloud" of galaxies that are in the **Tully Galaxy Group 33** – **ESO 121-026, ESO 122-001; NGC 2417, ESO 123-016, ESO 257-019** (in an adjacent constellation), ESO 163-011, ESO 123-023, ESO 124-015, NGC 2601 (in an adjacent constellation), **NGC 2714, ESO 126-003, ESO 126-004, NGC 2842, ESO 091-007, ESO 061-008, NGC 2887, ESO 126-013, ESO 091-018, and ESO 092-006.**
Cometary Globule, (CG 16), 07 27 36.4 -51 04 44, is a cometary globule. Also known as **DCld 262.9-15.5**, **Sandqvist 106**, and **Fest 2-38**.
Statue of Liberty Nebula, is a group of emission nebulae composed of **NGCs 3576, 3579, 3581, 3582, 3584, and 3586.**

Objects in Carina are as follows: 45 NGC, 12 IC, 107 ESO, 12 Ru, 5 Caldwell, 5 Cr, 9 Tr, 4 RCW, 16 vdB-Ha, 3 RCW, 7 Radio Galaxies, 17 PNG, 2 He 2, 1 He 3, 1 PGC, 5 Al, 1 Alessi, 1 Fei, 1 Str, 1 Stock, 8 Hogg, 1 Shorlin, 6 Loden, 4 Bo, 1 Gum, 2 AS, 1 CG, 1 Bas, 2 Sa, 3 Al-Teu, 1 Graham, 3 Mel, 3 ACO, 1 [PKL 98], 1 [DB01], 1 [PRT 94}, 1 Sher, Carina Dwarf Galaxy, Eta Carina Nebula, Toby Jug Nebula, Southern Pleiades, Keyhole Nebula, Argo Dwarf Galaxy, False Cross, Diamond Cross, for a total of 296 objects. Note: There are more than this, I have not finished cross referencing them.

Other Stars:

Theta Carinae, mag. 2.74, 10 42 57.43 -64 23 40.1, is a spectroscopic binary star (orbital period of 2.2 days), a blue-white main sequence massive dwarf star – a blue straggler – and the most prominent star in **IC 2602** (**The Southern Pleiades**), also called the "**Theta Carina Cluster**." It is located on the northeast edge of the **Diamond Cross** asterism. Also known as **HD 93030**, **HIP 52419**, **Gould 223 Carinae, SAO 251083**, HR 4199, **GC 14755**, and **IRAS 10411-6407**.
V 382 Carinae (HD 96918), mag. 3.93, 11 08 35.40 -58 58 30.2, is a hyper-giant slow irregular star. Also known as **HIP 54463**, **Gould 260 Carinae**, **x Carinae**, and **SAO 288813**.
HD 76348, mag. 6.02, 08 53 03.80 -56 38 58.5, has one planet in orbit. Also known as **HIP 43620**, **Gould 105 Carinae**, and **SAO 236360**.
WR 24 (HD 93131), mag. 6.46, 10 43 52.27 -60 07 04.0, is a Wolf-Rayet star located in **Cr 228**, and one of the most luminous stars known. Its rotational period is 4.76 days. Also known as **HIP 52488**, **Gould 226 Carinae**, and **SAO 238394**.
HD 53143, mag. 6.68, 06 59 59.66 -61 20 10.3, has a circumstellar disk. Also known as **HIP 33690**.
AG Carinae (HD 94910), mag. 6.96, 10 56 11.58 -60 27 12.8, 0.59'x0.59' in size, is a luminous blue variable (LBV) star that has moved beyond its main sequence and is one of the most luminous galactic LBVs. It is embedded in a planetary nebula (He 2-58), and its high luminosity (1.5 million times solar

luminosity) and its rotational velocity (220 ± 30 km per second) puts this star extremely close to the theoretical Eddington limit. Its rotational period is 371.4 days. Also known as **HIP 53461**, **CD-59 3430**, **ESO 128-021**, **GC 15044**, **GSC 08958-03996**, **SAO 251185**, **PK 289-00.1**, **He 2-58**, **He 3-528**, **IRAS 10541-6011**, **WR 31b**, **Wray 15-653**, and **AAVSO 1052-59**.
HD 93129A, mag. 7.31, 10 43 57.46 -59 32 51.2, is a binary star in **Trumpler 14**. The primary is one of the most luminous stars known. Also known as **Gould 225 Carinae** and **SAO 238396**.
HD 95086, mag. 7.36, 10 57 03.0 -68 40 02, has one planet in orbit. Also known as **HIP 53524**.
HR Carinae (HD 90177), mag. 7.57, 10 22 53.84 -59 37 28.4, is a luminous blue variable star. Also known as **HIP 50843**.
WR 40 (V385 Carinae), mag. 7.70, 11 06 17.20 -65 30 35.2, is a Wolf-Rayet star and a rotating ellipsoidal variable star with a period of 4.76 days. It is one of the most luminous stars known. Also known as **HD 96548** and **HIP 54283**.
HD 65216, mag. 7.98, 07 53 41.3 -63 38 50.4, has two planets in orbit. Also known as **HIP 38558.**
HD 51608, mag. 8.17, 06 54 51 -55 15 34, has two planets in orbit. Also known as **HIP 33229**.
HD 85628, mag. 8.19, 09 50 19.2 -66 06 50, has one planet in orbit.
RT Carinae (HD 303310), mag. 8.55, 10 44 47.15 -59 24 48.1, is an irregular variable star that is possibly in **Trumpler 15**. It is one of the largest stars known. Also known as **HIP 52562**.
GG Carinae (HD 94878), mag. 8.70, 10 55 58.92 -60 23 33.4, is a Be-type star and a re-radiating binary system. It has a period of 31.03 days. Also known as **HIP 53444**.

Stars beyond magnitude 10 that are of interest:

He 3-519, mag. 10.85, 10 53 59.59 -60 26 44.3, is a Wolf-Rayet star.
NGC 3603-A1 (HD 97950A), mag. 11.12, 11 15 07.31 -61 15 38.4, is a double-lined spectroscopic eclipsing binary system, with both components among the most luminous and massive stars known. The primary component is 116 solar masses ± 31 solar masses. It has an orbital period of 3.77 days. Located in **NGC 3603**.one of the most luminous and massive stats known.
NGC 3603-B (HD 97905B), mag. 11.33, 11 15 07.41 -61 15 38.6, is one of the most luminous and massive stars known (89 solar masses ± 16 solar masses).
OGLE-TR-113 (V752 Carinae), mag. 14.42, 10 52 24.4 -61 26 48.5, has one transiting planet in orbit.
2S 0921-630 (V395), mag. 15.3, 09 22 35.20 -63 17 38.5, is a low-mass X-ray binary star.
OGLE-TR-111, 132, 182, 211, and TR-L9 - all magnitude 15 or higher, have a transiting planet in orbit.
OGLE-TR-122 (V817), 11 06 52.0 -60 51 45.7, has a transiting brown dwarf star.
DENIS J081730.0-615520, 08 17 30.01 -61 55 15.8, is a brown dwarf star.
1E 1048.1-5937, 10 50 08.93 -59 53 19.9, is an anomalous X-ray pulsar star.
PSR J1048-5832, 10 48 12.2 -58 32 05.8, is a pulsar star.
PSR J1119-8127, 11 19 14.90 -61 27 49.5, is a pulsar star.

ASTERISMS:

Diamond Cross is larger than the **Southern Cross** (in Crux) and is viewed in the southern hemisphere as being upside down. It is formed by the stars **Beta, Theta, Upsilon**, and **Omega Carinae**.
False Cross, often mistaken for the **Southern Cross** (in **Crux**), and the mistake results in navigation errors. It is composed of **Iota** and **Epsilon Carinae**, and **Kappa** and **Delta Velorum**.
Stars in Carina: 11 Alpha, 37 h, 7 Rmk, 8 Δ, 4 Hu, 1 Str, 1 N2019, 7 R%, 16 I, 3 CorO, 77 Letter, 4 Gli, 1 MelO, 117 V, 5 Hd, 1 LDS, 2 Hrg, 1 Mlb, 1 Ø, 1 Cp, 1 L, 1 B, 1 Pak, 2 Slr, and 1 J for a total of 317 – there will be more when I finish cross referencing.

v

Mythology:

Carina – The Keel

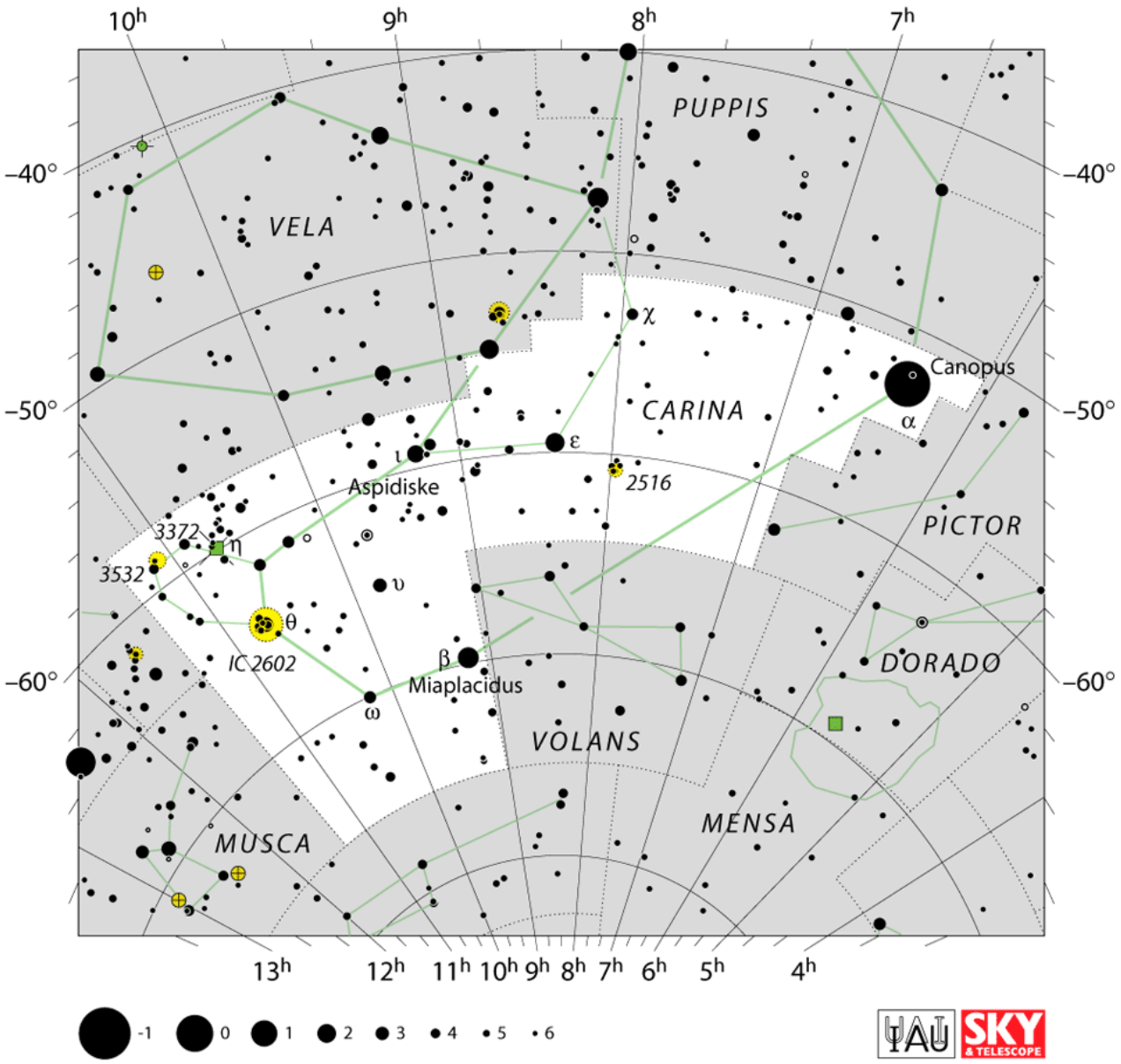
This is one of the parts into which the constellation Argo Navis, the ship of the Argonauts, was divided by the French astronomer Nicolas Louis de Lacaille in his catalog of the southern stars, published in 1763. Carina represents the ship's keel. It contains the second brightest star in the night sky, Canopus, a creamy white supergiant star approximately 300 light years away that marks one of the ship's two steering oars.

Canopus is not mentioned by Aratus, because the star was below the horizon from Greece in his day. The name first appeared with Eratosthenes, who worked further south, at Alexandria, and hence would have seen the star. Greek writers such as Strabo and Conon tell us that Canopus is named after the helmsman of the Greek King Menelaus. On Menelaus from Troy with Helen, his fleet was driven off course by a storm and landed in Egypt. There Canopus died of a snake bite; Helen killed the snake, and she and Menelaus buried Canopus with full honors. On that site, was the city of Canopus (the modern Abu Qir), at the mouth of the Nile. Fittingly, modern space probes now use Canopus as a navigation star. Eratosthenes also knew this star by the name Perigee, in reference to the fact that it remained close to the horizon.

The constellation Carina as it can be seen by the naked eye

Photo credit: Till Credner - Own work: AlltheSky.com
https://en.wikipedia.org/wiki/Carina_(constellation)

The constellation contains a unique star, Eta Carinae, that flared up to become brighter than Canopus in 1843 but has since sunken to below naked eye visibility. Astronomers think that it is a massive young star that will one day explode as a supernova.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