



Monthly Newsletter  
**Cape Fear Astronomical Society**  
Serving Wilmington, NC and Surrounding Areas

# CAPE FEAR Skies

February 2025

Cape Fear Astronomical Society is a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code.

## President's Message

by Ben Steelman

I get home late from class now, so it's already dark. When I went on the porch to pick up the mail, there was a young woman on the sidewalk, with her young daughter (say, about 5 or 6 ) and two of the family dogs.

Right in front of my house is one of the few clearings on our street, so the woman was showing her daughter the January Planet Parade. ("Look there's Venus, and there's Saturn ...") The dogs were unimpressed, though they jumped at the chance to defend their humans from the Strange Man who just walked out that door.

I tried giving them a few hints -- may if you had binoculars, you could see Uranus. (I was careful how I pronounced that.) Then I went back inside.

Perhaps I should have given her the Cape Fear Astronomical Society sales pitch, but the time didn't seem right. Still, the message was clear: Folks are still curious about what's happening in the night sky. We ought to seize every chance we get to help them, so we can draw younger people into our hobby, and maybe into science, and keep the adventure going..

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I don't know if you noticed, but the day after Christmas, the StarNews ran a profile of one of our longtime members, Samuel D. Bissette. (In case you missed it, here's the link: <https://www.starnewsonline.com/picture-gallery/entertainment/arts/2024/12/26/pictures-of-art-created-by-late-wilmington-nc-artist-samuel-bissette/76888839007/>)

Sam, who died in 2005 at the age of 84, never held office, but he was a mainstay of the Society. *Photo from the StarNews article.*

A Depression baby, he was unable to go to college, served in the Army Air Corps during World War II. From there, he entered a career in business, rising to become president, then board chairman of the old Peoples Savings & Loan.

He didn't go to college but he educated himself. At the age of 50, he took up painting, eventually winning prizes for his



watercolors. If you ever go by Independence Mall, notice the Wilmington street scenes on the murals outside the Belk entrance. Sam designed those.

He taught himself astronomy, too. Sometimes, Sam combined his interests; he did a whole series of paintings on astronomical subjects, including a gorgeous rendering of the Horsehead Nebula. Many of these used to hang in the hallways of DeLoach Hall; I wonder what happened to them.

One of Sam's inventions was what he called "astromicroscopy." He would take colored 35mm slides of the night sky, with filters to adjust for light pollution and ultraviolet bands. Then he would examine the slides with a microscope. This way, he was able to identify a number of nebulae, galaxies and other objects which ordinarily could not be seen without a telescope. Sometimes, he picked up things that weren't on conventional star charts. Critics said he was looking at pixellation errors or impurities in the emulsion -- this was in the 1990s, back in the pre-digital days -- but Sam may have been onto something. You can find the guidebook he wrote on the process in the Society library.

\*\*\*\*

I hope you were entertained by my talk on the New York Sun's "Great Moon Hoax" of 1835. If you'd like to learn more, here are a couple of volumes.

"The Secret History of the Jersey Devil" by Brian Regal and Frank J. Esposito (Johns Hopkins University Press, 2018). In addition to a number of other newspaper hoaxes, this includes an extended account of the Moon Hoax.

"The Reason for the Darkness of the Night: Edgar Allan Poe and the Forging of American Science" by John Tresch (Farrar, Straus and Girou, 2021). OK, we know that Poe wrote "The Raven" and a bunch of other poems, and that he wrote a number of horror stories that got made into drive-in movies with Vincent Price back in the '50s and '60s. A few of you might also know that Poe basically invented the modern detective story, decades ahead of Arthur Conan Doyle, with "Murders in the Rue Morgue" and "The Purloined Letter."

Tresch, a historian who teaches in London, makes the case that Poe also invented American science fiction. Poe picked up a fair education in contemporary science during his brief stint at West Point, and he wrote about scientific topics throughout his career. As I noted, in my talk, Poe had written his own spoof of a moon voyage, "Hans Pfaal," which appeared in the Southern Literary Messenger in the summer of 1835. The author of the Sun's moon seems to have got some of his ideas from Poe, who was not offended and admired the yarn's inventiveness. As Tresch notes, Poe also got wind of Charles Babbage's work and was thinking early about the possibilities of thinking machines.

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Just a final reminder: Because of something called the "Super Bowl," our regular indoor meeting will be on Sunday, Feb. 2. In March, we go back to our regular schedule.

*Keep Looking Up!*

# Calendar

The full club calendar is available at <https://www.capefearastro.org/calendar.htm>

## Sunday, February 2

★ Cape Fear Astro Monthly Meeting ★

7:00pm – 9:00pm - 212 DeLoach Hall; UNCW

Also simulcast via Zoom

## Presentations Scheduled, Presentations Needed

*by Jon Stewart-Taylor*

Many thanks to Ben for giving us a program on the Great Moon Hoax.

**February:** I plan to do a program on the just-retired GAIA spacecraft mission: what it was, and what it's shown us about our galaxy.

**March:** *Presentation needed.*

**April:** Dr. Barbara Becker will be giving us another of her wonderful historical presentations ""Horrid Quasar: The Redshift Controversy".

**May:** *Presentation needed.*

**June:** Frank Rich will talk to us about old-school setting circles. Despite the computerization of modern mounts, we still have them on the Atlas in the club observatory.

**July-November:** *Presentations needed.*

If you would like to do a program where needed, or can suggest someone who might be willing to do a program for us, please send me email.

## March 29 Star Party

*by Karl Adlon*

Due to heavy rains, last late Fall's star party for Members of the Maritime Museum was postponed. It has been rescheduled for March 29 will be held at the Brunswick Town/Fort Anderson State Historic Site.

The museum expects about 30 members will attend. There is very little lighting on site and park officials are also interested to find out what we think of the site for astronomy.

Be aware that Route 133 is closed for bridge repair/construction, so if you are coming from the Wilmington area, you would have to take "the long way around".

More later.

# A One-Way Trip to Alpha Centauri

by Roger Blake

What type of space ship would be needed to get to Alpha Centauri, and how long would it take?

There are several relativistic trip calculators on the internet. I used "Space travel calculator" at <https://spacetravel.simhub.online>.

The input is described below.

**Distance** - 4.37 lightyears to Alpha Centauri

**Flight Plan** – Continuous acceleration from earth to the midpoint, then continuous deceleration to a stop at Alpha Centauri.

**Payload** – The dry mass of the rocket ship (no fuel). I used 225 tons (dry), the estimated mass of a crewed SpaceX Starship. For reference, the fuel mass is 1500 tons fuel only.

**Acceleration** – acceleration is how fast the rocket changes speed. The higher the acceleration, the greater the forces on the pilot and crew in the form of an artificial gravity. An acceleration of 1 g provides an artificial gravity equivalent to earth's gravity, 0.38 g for Mars gravity. Humans can tolerate high g's for short periods, but this trip will take years so I used 0.38 g and 1 g to maintain the health of the crew.

**Fuel Conversion Rate** = this is the direct conversion of the fuel mass into energy in accordance with Einstein's equation,  $E = mc^2$ . Most folks familiar with this equation understand that mass (m) CAN be converted to energy (E) in nuclear reactions, but may not realize that ALL energy is produced by mass conversion, even from the chemical reaction of igniting the gasoline in car engines. The fuel conversion rate is the fraction of the fuel mass that disappears because it was converted to energy.

I tried three different types of rockets with different fuel conversion rates:

**A chemical rocket** that combusts liquid hydrogen with liquid oxygen to form water (H<sub>2</sub>O) has a mass conversion rate of about 0.00001 (0.001%). This means that 0.001% of the fuel mass disappears because it was converted directly to energy.

**A nuclear fusion** rocket does not yet exist, but would fuse hydrogen atoms together to form heavier Helium atoms, just like the Sun, with a fuel mass conversion rate of 0.008 (0.8%).

**An antimatter rocket** also doesn't exist, but might have a conversion rate of 1.0 (100%). This is as high as would be possible.

I did 3 sets of calculations: 3 types of rocket engines (chemical, fusion, antimatter) and two acceleration values (1g for earth gravity and 0.38 g for Mars gravity). Results are shown in the table below.

Max V is the maximum ship velocity at midpoint. The fuel masses required for each case are shown as "Equivalent Starship Fuel Tanks". One Equivalent tank representing 1500 tons, which is what Starship can hold.

The fuel requirements seem to be the limiting factor. The case with the smallest fuel requirement is the 0.38g acceleration with an antimatter drive which required the equivalent of 1,605 starship tanks of fuel. How would we build that, strap 1605 starship bodies together and then fill all the tanks? And that's only for a one-way trip. Interstellar trips don't seem possible.

Alpha Centauri - One Way Trips						
Accel	Max V	Earth	Ship	Fuel		Equiv
g	c	Time	Time	Conv		Starship Full Fuel Tanks
0.38 (Mars)	0.84	8.0 yrs	6.3 yrs	0.00001	chem	160,521,112
				0.008	nuclear	200,651
				1	antimatter	1,605
1.00 (Earth)	0.95	6.0 yrs	3.6 yrs	0.00001	chem	589,952,952
				0.008	nuclear	737,441
				1	antimatter	5,900

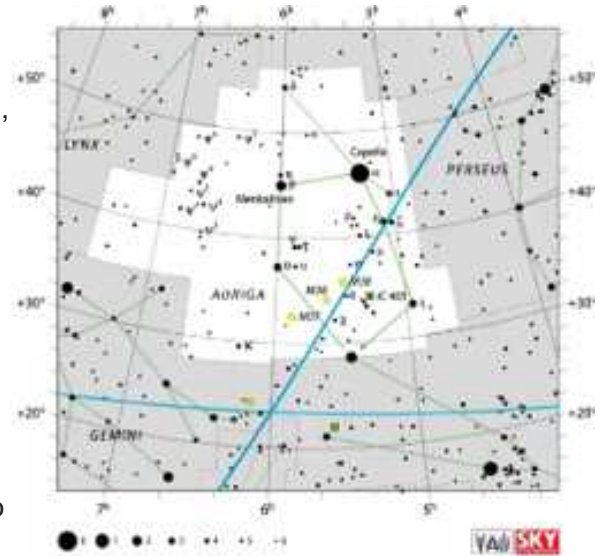
# Auriga

by Jon Stewart-Taylor

This is one of the ancient constellations, and was included in Ptolemy's 48. Auriga is a Charioteer. Given the available bright stars, about the best we can do is make him a bit of a blockhead, with a nose pointing to the east.

The brightest star is  $\alpha$  Auriga, Capella. Capella is also called the Goat star, representing a mother goat. The stars in Auriga's nose ( $\epsilon$ ,  $\zeta$ , and  $\eta$ ) are the kids.

There are three Messier objects in Auriga: bright open clusters, M37, M36, and M38. All these images were taken with the Seestar S50. I've tried to keep the exposure times low, so they approximate what you'd see through a "modest" sized (4" to 6") telescope.



IC 405, also known as the Flaming Star, is an emission and reflection nebula. It's an excellent target for imaging, but a bit difficult visually unless you have a pretty big scope. That's the reason I'm not including an image of it here.

There are also quite a few NGC objects which are worth looking at. These are mostly dimmer and smaller than M's 36, 37, and 38, and can be harder to find. To be honest, for some of these the excitement is in finding them at all, rather than what you see once they're found. For NGC 1931, I took a bit longer exposure to bring out some of the nebulousity. The color probably won't be visible in any scope under 10".

Images are on the next page.



**NGC 1664**



**NGC 1857**



**NGC 1907**



**NGC 1931**

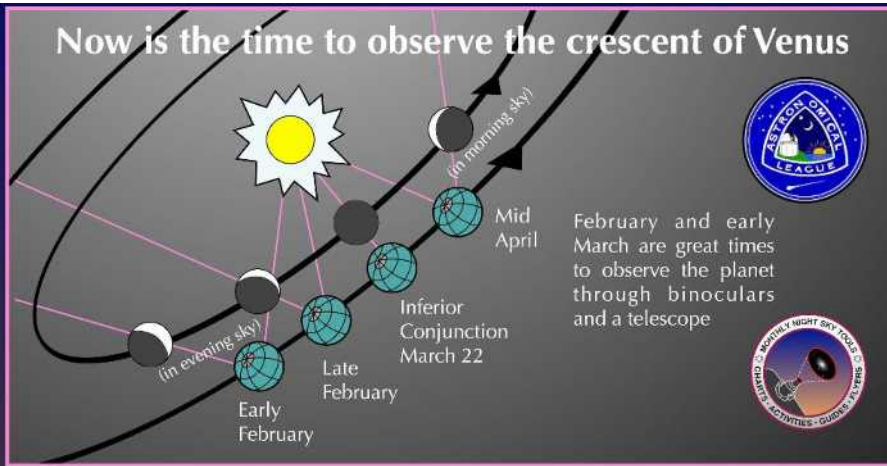


**NGC 2126**



**NGC 2281**

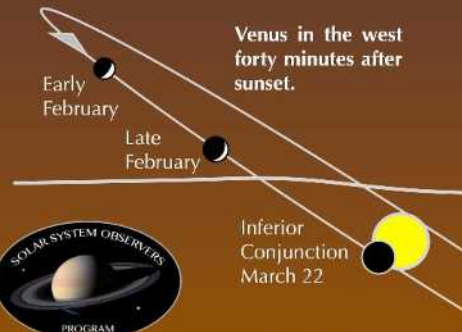
## Now is the time to observe the crescent of Venus



February and early March are great times to observe the planet through binoculars and a telescope

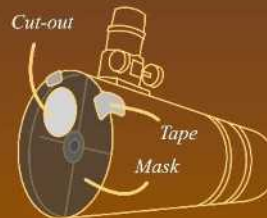


The view through a telescope changes quickly in just six weeks. As the Venus - Earth gap narrows, Venus becomes a thinner, but wider crescent.

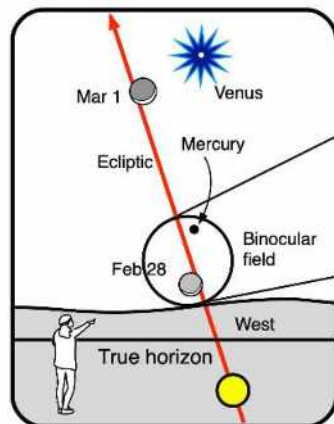


Venus in the west forty minutes after sunset.

If you use a reflector or SCT, placing an off-centered cut-out mask over the optical tube entrance helps give a sharper view.

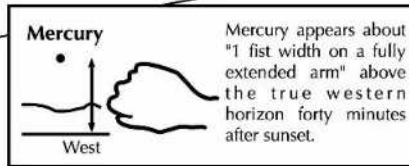
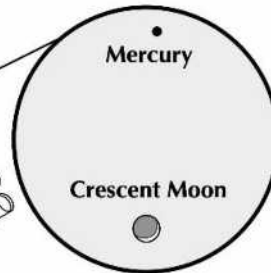


## Mercury, Venus, and the young moon in the evening twilight



February 28 and March 1, 2025: Mercury and the young crescent moon forty minutes after sunset in the west

View through 10x50 binoculars on February 28



Mercury appears about "1 fist width on a fully extended arm" above the true western horizon forty minutes after sunset.

### The young moon & Mercury in the evening twilight

Have you ever spotted Mercury? Many stargazers have not. The early evening on February 28 presents a good opportunity to catch the elusive little planet. Look low into the western twilight forty minutes after sunset.

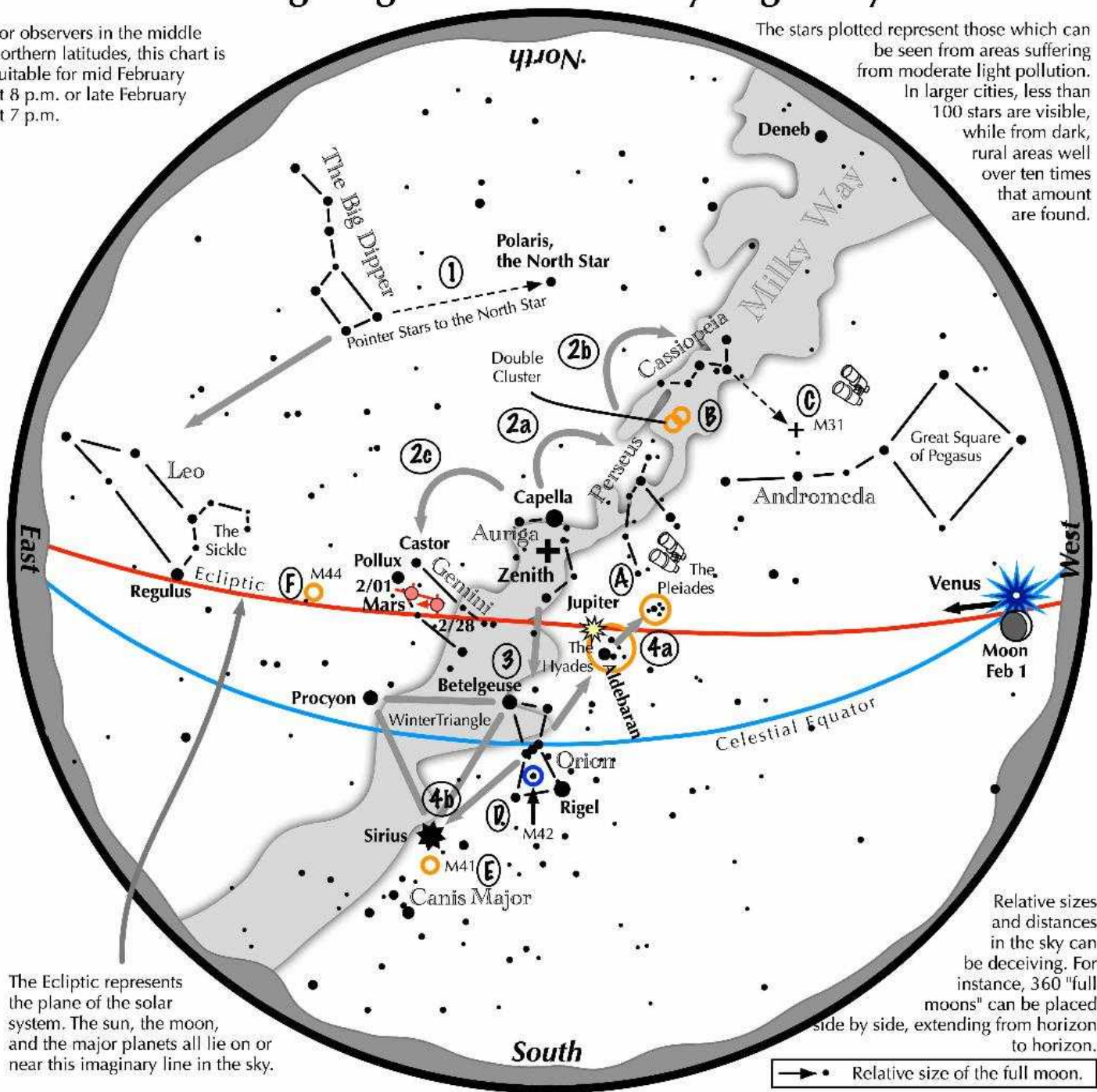


- Using binoculars, look on February 28 for the very thin crescent Moon floating above Mercury. Can you see Earthshine on the Moon's dark side or is the twilight too bright?
- On the next evening, Mercury is in the same place, but the moon has moved to higher and closer to brilliant Venus. Earthshine should be more easily visible.

# Navigating the mid February Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid February at 8 p.m. or late February at 7 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

## Navigating the February night sky: Simply start with what you know or with what you can easily find.

- 1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
- 2 Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
- 3 Directly south of Capella stands the constellation of Orion with its three Belt stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
- 4 Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius, a member of the Winter Triangle.

### Binocular Highlights

- A: Examine the stars of two naked eye star clusters, the Pleiades and the Hyades.
- B: Between the "W" of Cassiopeia and Perseus lies the Double Cluster.
- C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
- D: M42 in Orion is a star forming nebula. E: Look south of Sirius for the star cluster M41. F: M44, a star cluster barely visible to the naked eye, lies southeast of Pollux.





## Get to Know YOUR Astronomical League



The Astronomical League (Astroleague or AL) is one of the largest amateur astronomical organizations in the world. The organization serves to encourage an interest in astronomy (especially amateur astronomy) and promote the science of astronomy by:

- ✓ fostering astronomical education;
- ✓ providing incentives for astronomical observation and research;
- ✓ assisting communication among amateur astronomical societies.



CFAS is one of over 300 member societies affiliated with the Astroleague. Your membership in CFAS allows you take full advantage of this relationship so periodically review the information below to see how the Astroleague can support your astronomical interests and endeavors.

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<b>Additional AL News, Information and Reminders</b>	<p><b>Reminder: The March 2025 Reflector will not be issued in hard copy. When available, please use the link above to download the March 2025 edition. The AL hopes to resume hard copy issues with the June 2025 edition.</b></p> <p>Click <a href="#">HERE</a> for the Astroleague News Page and be sure to check the Astroleague Home Page weekly for new and important posts.</p> <p>Contact Hank Lyon, <a href="mailto:hlyon8448@gmail.com">hlyon8448@gmail.com</a>, for any changes to your Reflector delivery preferences (US Mail, Email or Both).</p>

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**CFAS Correspondence:**

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Members are welcome and encouraged to submit articles or other input for "CAPE FEAR SKIES". Submit any and all interesting items for publication to Karl Adlon, Editor (email [kmja79@yahoo.com](mailto:kmja79@yahoo.com)).

***Cape Fear Astronomical Society is a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code.***

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Vice-Pres:	Jon Stewart-Taylor
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ALCor	Hank Lyon

**Dues:** Dues for 2025 are \$25 for Individual and \$32 for Family Membership. Students dues are \$5 per year.

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