



CAPE FEAR Skies

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



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

August 2023

President's Message

by Ben Steelman

I clearly spend too much time watching movies and not enough stargazing. Still there's been enough at the omniplex to distract amateur astronomers this summer.

I'll start off with "Oppenheimer." Christopher Nolan's movie makes clear that -- if he hadn't built the atomic bomb -- "Oppy" would be known for pioneering the theory behind black holes.

He published his big paper on collapsing singularities on September 1, 1939. Unfortunately, his big breakthrough was overshadowed by the Nazis invading Poland and starting World War II. Also, Oppenheimer didn't come up with a good name for his singularity. John Archibald Weaver didn't coin the phrase "black hole" until 1967.

Then there's "Indiana Jones and the Dial of Destiny," the fifth and last of the Indy movies -- which unfortunately seems to be rated a dud. Its title McGuffin, of course, is the Antikythera Mechanism, one of the most complicated machines of the ancient world.

The movie jumbles this all up. We're told the device is sort of like a Taradis -- it can supposedly "open holes in the fabric of time." A Nazi scientist who worked on the U.S. space program Mads Mikkelsen, made up to look like Wernher von Braun, tries to steal the device so he can change the course of WW II.

Well, he would have had a hard time. The device -- about the size of a shoebox -- is heavily encrusted and rusted after 2,000 years on the bottom of the Mediterranean, and apparently we only have about one-third of it.

It was discovered by Greek sponge divers in 1901 (the movie says 1902) off the island of Antikythera. (The mechanism isn't "anti" anything; the name in Greek means "opposite Kythera" to distinguish the smaller island from the nearby, larger island of Kythera.)

Today, the mechanism is in 82 pieces, including a number of bronze gears. (Jacques Cousteau and his divers found some more pieces on a dive back to the wreck in 1976.) The artifact was pretty much ignored for years, until the 1950s, when scientists tried to figure out the gearwork. In 2008, a team from Cardiff University in Great Britain took detailed Z-ray images and constructed a re-creation.

What it is, is an analog computer -- a very complicated one. It traces the paths of the moon and sun, with gears to predict past and future positions, the advent of season and the times to schedule Olympic games.

So intricate is the gearwork that Western Europeans had nothing comparable until the 14th century. It's accurate to about 1 degree per 500 years. Centuries before Kepler, the mechanism treats the moon's orbit as an ellipse.

It's believed that additional gears would cover the orbits of the five known planets of the ancient world, Mercury, Venus, Mars, Jupiter and Saturn.

"Indiana Jones" says the mechanism was invented by Archimedes (who makes a cameo appearance); the Roman orator Cicero wrote about a "sphere of Archimedes." Most modern scholars, however, credit the device to Hipparchus of Rhodes (roughly 190-120 BC), the Greek astronomer who's credited as the father of trigonometry.

The device was found on a Roman ship, along with lots of statues, bronze artifacts and other valuable things. There's some speculation that it was being shipped to Rome around 85 BC for the triumphal march of Sulla, the Roman general who sacked Athens. Prevailing opinion, however, puts it a little later, being shipped from Greece or modern-day Turkey to some wealthy Roman buyer.

Those who'd like to know more about the Antikythera mechanism can start with this article:

[15 Intriguing Facts About the Antikythera Mechanism | Mental Floss](#)

Calendar

August 2023

Date – Event – Time

- 01 Full Moon
- 08 Last Quarter Moon
- 09 Mercury at greatest Eastern elongation (evening)
- 11 Club Observing @ Starfields (the Club Observatory);
7:00 PM; 3rd Quarter Moon**
- 12 Perseid Meteor Shower; ZHR 100: Waning Crescent Moon
- 12 Club Observing @ Starfields (the Club Observatory);
7:00 PM; 3rd Quarter Moon**
- 13 ★ Cape Fear Astro Monthly Meeting ★**
CFAS Monthly Meeting - 6:00pm – 8:00pm
Ingram Planetarium
7625 High Market St, Sunset Beach, NC 28468
No Zoom simulcast
- 16 New Moon
- 18 Club Observing @ Starfields (the Club Observatory);
7:00 PM; New Moon**
- 19 Club Observing @ Starfields (the Club Observatory);
7:00 PM; New Moon**
- 24 First Quarter Moon
- 26 Public Observing; 08:00 PM; Public Observing
Session; starts at sunset; Carolina Beach State Park**
- 27 Saturn at opposition
- 31 Full Moon

Astro phenomena from:

<https://www.universalworkshop.com/astronomical-calendar-any-year/>

2023 Public Events

Watch this space for 2023 Public Events. If you haven't done one before, try one – you might like it!

August 26 – CBSP

September 23 – CBSP

October 21 - International Observe the Moon Night – Location TBD

October 21 – CBSP

CBSP = Carolina Beach State Park

2023 Monthly Meeting Dates and Presentation

August 13, 2023
(Tentative): Field Trip to Ingram Planetarium

September 10, 2023
Frank Rich on Eyepieces

October 8, 2023
Dr. Narcisa Pricope, UNCW Earth and Ocean Sciences; topic TBD

November 12, 2023
OPEN

December 10, 2023 (Date and time may change for Holiday Celebration)
Holiday Celebration (and annual meeting?)

Special Interest Groups (SIGs)

Usual meeting dates – watch emails for exceptions

Phenomena: First Wednesday

Both Eyes: Second Tuesday

Telescope Usage: Third Tuesday

New Astronomer: Third Wednesday

Outreach: Fourth Tuesday

Now What?

by Karl Adlon

In my article last month, "Potentially, a New Direction", I wrote:

Deep sky astrophotography may be possible. It depends on being able for my Canon camera to attain focus. I need to see if the focal plane is sufficiently extended from the focuser that the camera will focus. If not, I'll need to shorten the 8 truss tubes. I'll probably need to attach some weights at the rear to compensate for the camera weight at the front.

This morning (July 12) I set the scope up and, yes, not enough in-focus for the camera (darn!).

Next I pointed the scope vertically, removed the mirror, placed some scrap, short pieces of 2x4 on the mount and placed the mirror in scope. This moved the mirror 1.5" closer to the secondary, moving the focal point 1.5" closer to the camera. Since the mirror edge strap was no longer effective, I needed to find a star close to vertical. Then I tried this configuration, which turned out to be right, with maybe 3/16" to spare.

I have a 1.5" extension I can use with eyepieces, so shorted truss tubes won't affect visual use.



There they are at left, the 1.5" remnants.

A side benefit is that the eyepiece is 1.5" lower what the scope is pointed vertically.

What about the shroud? It'll be 1.5" too long.

The cheap (my way) solution might be to roll the top and bottom edges of the shroud as needed. If that doesn't work – well I just checked and "Shrouds by Heather" is still in business and I can have her make a new one for a bit over \$100.

I've reassembled everything but haven't had good enough skies to check it all out.

I may have to re-balance the scope. And after that, the next possible issues are polar aligning the equatorial platform and verifying its drive accuracy, which need to be pretty close as, like most Dobsonians, there's no guiding since there's no fine adjustment. There might be another article here!

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

"Should I wear my Glasses when viewing?"

by Karl Adlon

Here's what I say / advise:

At a busy Public Event: YES. I don't want them refocusing my scope and then I have to refocus it while others wait.

But once the crowd is gone, I might change that to follow the following:

If for Lunar / Planetary observing I'll ask: "Do you have astigmatism?" If "Yes" then they should continue with glasses unless they want to try without.

For faint fuzzies, try without. (A little more fuzziness may not matter.)

I have astigmatism. I almost always wear my glasses when observing.

And, here's a blanket "Yes" for you: You don't need to ask ME if it's OK to focus my scope for your eyes so you have a better view. If there are others going to view, let me know you did so I can put it back for them.

One other tip for glasses wearers for best views: Be sure your glasses are clean and the prescription is current.

A Little About SCT Collimation

Frank Rick emailed me that this tool (web app) may be of interest. Free and works on SCTs (Schmidt-Cassegrain Telescopes).

<https://stargazerslounge.com/applications/core/interface/file/attachment.php?id=56101>

I found this, which also may be of interest:

https://astrophotography.app/usersguide/collimation_aid.htm

Frank offered that Metaguide could also be useful.

I had seen that before but requires you mount to be controlled by your computer (so I haven't tried it).

Then I found the basics of collimation here:

<https://www.highpointscientific.com/astrophotography-hub/post/how-to/collimating-your-sct-for-best-performance>

It starts with the usual guidance to aim at a bright star, adjust it out of focus and center the shadow of the secondary on the ring of light.

HOWEVER, it then continues:

When you do you are almost there, so take a deep breath and pat yourself on the back! You will want to take one more step to ensure the best results, however. Tweak your focus a bit so that the star is just slightly outside of perfect focus. If your telescope is perfectly collimated at this point you should see a tiny white dot centered within the shimmering diffraction pattern. This small dot is called "Poisson's Spot" and it determines the true center of your diffraction pattern. Only when this spot is precisely centered can you call your work done. If it is off slightly, just keep making small tweaks to one or more of your collimation screws all the while keeping the star image as well centered as you can. If you are patient and persistent you will end up seeing something like this.



I haven't seen the part about "Poisson's Spot" before.

I like to use my Canon T7i, flip the screen around so I can see it from the front of the scope and adjust the screws that way.

I'll have to do that again and see if I can see the spot. Here Spot!

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Using the "Watch List" in AstroHopper

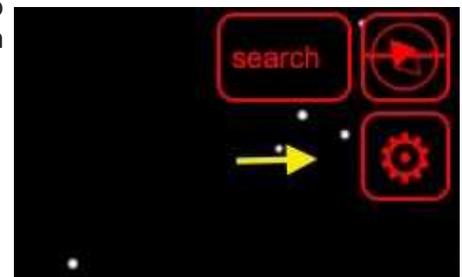
by Jon Stewart-Taylor

The AstroHopper manual describes creating a "Watch List":

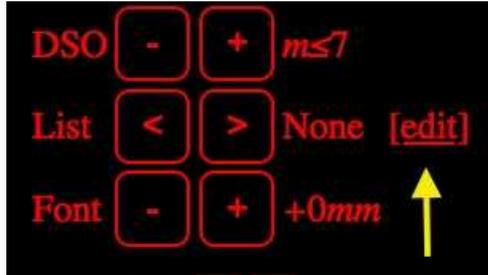
- A user can create a custom watch list in advance to browse them easily during the night. There is List option in "Settings" menu. It has [edit] control to open watch list editing tool.

- A watch list is defined by a simple list of object names separated by space, new lines or commas.

A "Watch List" is a list of objects you want to observe, and which AstroHopper will guide you to, one after another in the order you enter them. This article will take you step-by-step to create a watch list. You might want to follow along with AstroHopper on your own device. First, open the settings:



The "List" controls include an "[edit]" option:



Clicking this will allow you to edit the "Watch List(s)":



You enter the list of objects you want AstroHopper to guide you to. In the image below, "UMaj_Galaxy_Tour" is the name of the list, marked by a colon (:) at the end. You don't have to give your list a name, but it's a good idea if you want to enter more than one list at the same time. Each object you want to visit is listed, separated by commas (,). It is not currently documented if there's a maximum number of objects, or characters in the list. After all your objects are listed, click the "save" button. You can also discard your changes. The previous state of the list(s) will be left unchanged.



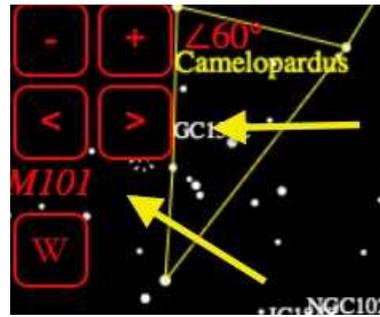
Once it's saved, you can select a list by clicking on one of the arrow keys in Settings. The name of the current list will be displayed. You can move from list to list by clicking the forward and backward arrows:



After a list is selected in Settings, the current object in the list will be shown on the main screen:



Clicking on the arrows will move to the next (or previous) object:



You can create multiple lists, by starting each on a separate line, and giving each a unique name:



One wrinkle is that for each object in the list, you must use the name AstroHopper has in its internal database. This could be an NGC or Messier number, or a common name. You cannot reference stars by their Bayer (greek letter) designation. The easiest way to find out what AstroHopper calls an object is to click on it on the main screen.

There are some other options while creating "Watch Lists", which you can read about in the AstroHopper manual: <https://artyom-beillis.github.io/manual.html>

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Thinking About Saturn

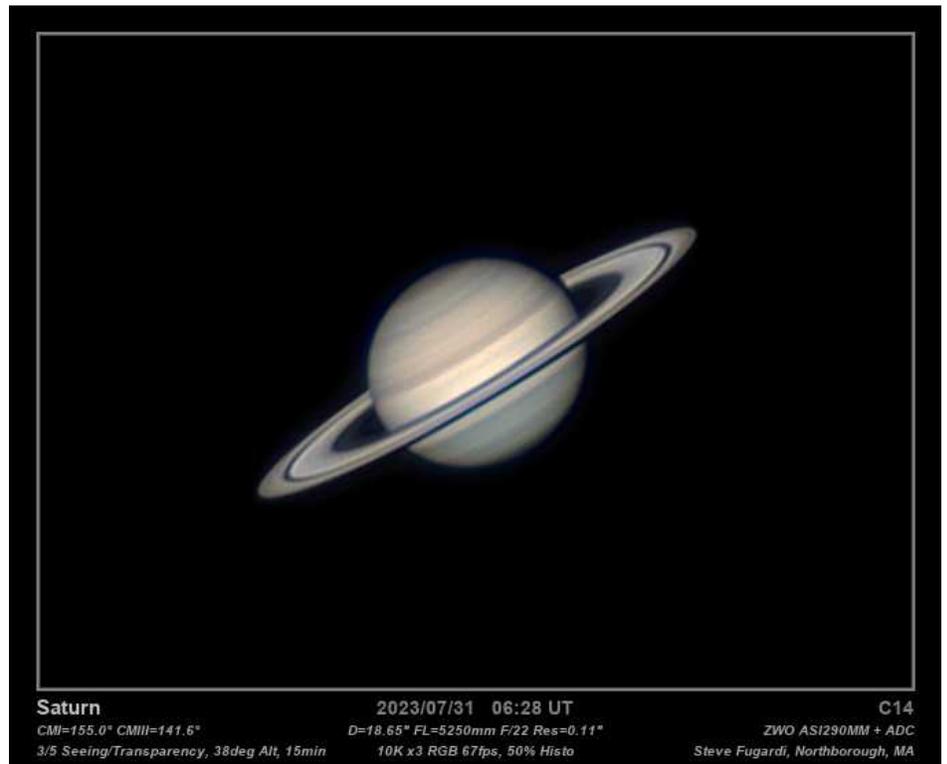
The ringed planet currently:

- ★ is a morning object which transits about 3 A.M.
- ★ has narrow rings that are closing up from Earth's perspective.
- ★ is about 822 million miles distant (about 1.25 light-hours)
- ★ is magnitude 0.58.
- ★ has a year of 29.4 Earth years.

The image at right is posted on Cloudy Nights at:

<https://www.cloudynights.com/topic/885652-saturn-c14-73123-more-average-seeing/#entry12846243>

The next rings edge-on view will be March of 2025 and fully open in May 2032.

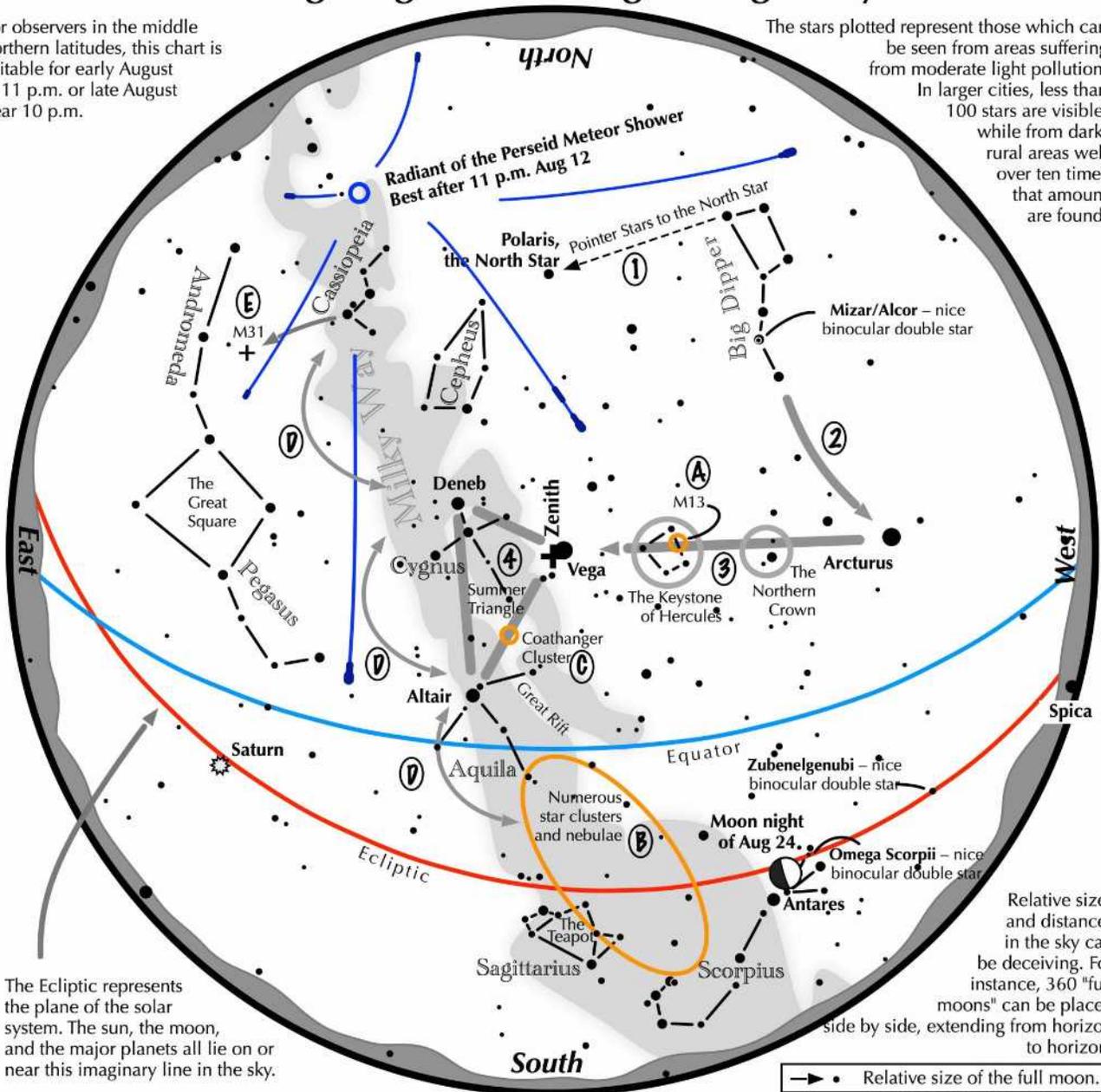


Astronomical League Information

Navigating the mid August Night Sky

For observers in the middle northern latitudes, this chart is suitable for early August at 11 p.m. or late August near 10 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 mid August night sky: Simply start with what you know or with what you can easily find.

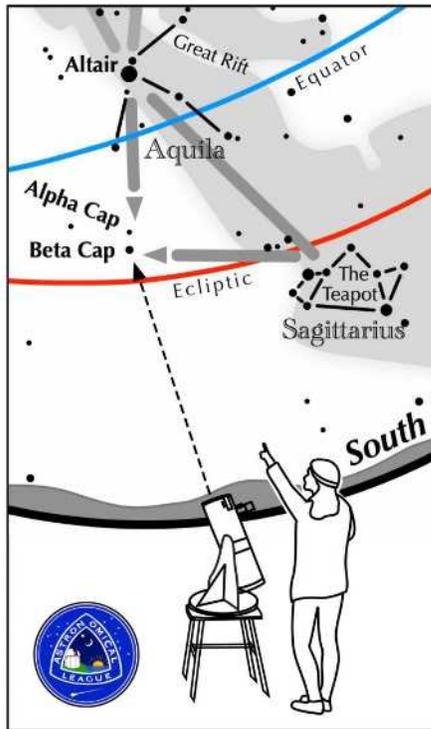
- 1 Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Follow the arc of the Dipper's handle. It intersects Arcturus, the brightest star in the June evening sky.
- 3 To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
- 4 High in the East lies the summer triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

- A: On the western side of the Keystone glows the Great Hercules Cluster.
- B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
- C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- D: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.
- E: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.



ASTRONOMICAL LEAGUE Double Star Activity



Other Suns: Beta Capricorni

How to find Beta Capricorni on an August evening

Find bright Altair, the southeastern member of the Summer Triangle. Then locate the "Teapot" asterism of Sagittarius. Use them to form a right triangle with Beta Capricorni being the right angle vertex.

Suggested magnification: >10x
Suggested aperture: >2 inches

Beta Capricorni

A-B separation: 207 sec

A magnitude: 3.2

B magnitude: 6.1

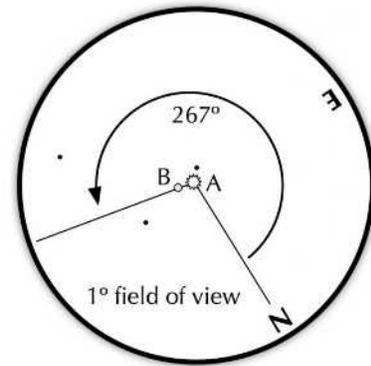
Position Angle: 267°

A & B colors:

orange, white



Good binocular object!



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.

AstroLeague Home Page <i>New Website!</i>	www.astroleague.org
AL Observing Programs <i>(Alphabetical Listing)</i>	https://www.astroleague.org/alphabeticobserving/
Navigating the Night Sky <i>(Monthly Guides and Links)</i>	https://www.astroleague.org/navigating-the-night-sky-guides/
AL Member Society Aids	https://www.astroleague.org/aid-for-member-societies-of-the-astronomical-league/
Current and Past Issues of <i>Reflector Magazine</i>	https://www.astroleague.org/reflector/
Additional AL News, Information and Reminders	Happy with your <i>Reflector</i> magazine delivery preferences (digital or snail mail)? If not, please let your ALCor know your preference. Your current CFAS ALCor is Hank Lyon, hlyon8448@gmail.com .

The AstroLeague Correspondent (or ALCor) is your link between CFAS and the AstroLeague. Don't hesitate to contact your ALCor if you need assistance with anything AstroLeague related whether its general information or detailed coordination of observing program completions for certification. **Check back each month to see any new links, postings or reminders.**

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