CAPE FEAR Skies

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

July 2020

President's Message

by Jon Stewart-Taylor

This has been a difficult few months, and doesn't look like it's going to get easier soon.

The COVID-19 curve appears to have flattened temporarily, then risen again as people relaxed their precautions. At this point, it doesn't look like the pandemic will be going away until a vaccine has not only been developed, but is distributed widely. Please, do all you can to ensure your safety and the safety of family, friends, and neighbors.

The weather also hasn't been very helpful. Cloudy much more often than not, with almost daily rain. If we get one clear night per week, we're very fortunate. One of the long-time club members once proclaimed "May is the end of observing until the end of summer". While that's not strictly true (as the evening of Friday the 27 showed most recently), observable nights are to be treasured and taken advantage of during our south-eastern North Carolina summers.

On the corporate front, we're making steady progress. All the minor issues with the Incorporation Process have been fixed, the "Club" property is being transferred to the "Society", and as soon as our 990-N income tax form is filed, we can proceed with the 501(c)3 filing. We'll keep you posted as progress is made. I hope to see the whole processed wrapped up by the end of the year.

Several Special Interest Group meetings were held, with the Both Eyes and Club Observatory groups off to a good start. The Brunswick Area SIG is starting more slowly, due to its largely geographical and social nature, but I think it will do well. If you're interested in these groups, feel free to join in: I'll always post the meeting info to the e-mailing list. If there's a SIG you'd like to see, send me an e-mail, or just start it yourself.

In closing, I'd like to reinforce that, although this club is having difficulty actually meeting, the core reasons we joined the club are still strong. We can still connect in other ways than in-person monthly meetings. Telephones, texting, e-mailing, and even observing (6 feet apart) are all still available. Even if you're by yourself, being out under the beauty of the night sky is calming, centering, inspiring.

Due to the COVID-19 virus pandemic, we are now under "safer-at-home phase 2" orders. No CFAstro public events are planned. Meetings will be via Zoom. Member observing as noted, with "social distancing".

July 2020

Date – Event - Time

05 Full Moon - Buck Moon

05 Penumbral Lunar eclipse - 04:44 AM UTC - Note that since it is a penumbral eclipse, it can be hard to see, as the Moon will only be a bit fainter.

10 Club Observing; 08:30 PM; TBD

11 Club Observing; 08:30 PM; TBD

12 July Monthly Meeting via Zoom; 07:00 PM with Business starting at 08:30 PM

12 Last Quarter Moon - 11:00 AM UTC

14 Jupiter at Opposition - 08:00 AM UTC

15 Pluto at Opposition - 11:59 PM UTC

17 Club Observing at Starfields; Shiloh Road Ivanhoe NC; 08:30 PM

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20 New Moon - 05:32 PM UTC

20 Saturn at Opposition - 10:00 PM UTC

22 Mercury at westernmost elongation; 20.1 deg. from Sun in morning sky - 03:00 PM UTC

27 First Quarter Moon - 12:33 PM UTC

29 Southern Delta Aquarid meteors; ZHR 25; peak Jul 29 16h; 2 days after First Quarter

Astro phenomena from https://www.universalworkshop.com/astronomical-calendar-any-year/

July Meeting Program

Beyond Starlink SpaceX's Satellite Constellation Effect On Astronomy

by Tom Jacobs

Tom will present an overview of some current professional astronomers' observations about the future of astronomy and the SpaceX (& others) Starlink satellite constellation.

As you know, the July Meeting starts at 7 PM and will be via Zoom.

Tourist Traps for Early Summer

by Jon Stewart-Taylor

"Tourist Traps" are the objects to view during public observing sessions, and are generally:

- ★ Easy to find, even in light-polluted conditions.
- ★ Able to stand up to a bright background sky.
- ★ Representative of a class of objects.
- ★ Unusual or distinctive trait or appearance.

In this article we'll cover three objects in Hercules. They'll be visible pretty much all summer during the observing hours most public sessions keep.

M13, Globular cluster. Probably the most observed globular cluster in the northern hemisphere, and for good reason. It's a spectacularly beautiful cluster in pretty much any scope at pretty much any power. M13 is bright enough to stand up to considerable magnification, and applying additional power brings out additional detail. The cluster's outer regions resolve into chains of stars.

M13 is about 25,000 light years away, and about 145 light years across. Estimates on the number of stars it contains vary from several hundred thousand up to nearly a million. The age of the cluster is also hard to pin down, with estimates ranging from 14 billion to 25 billion years. Compare to the age of the earth at 3.5 billion years.

M92, Globular cluster. M92 is usually overshadowed by it's more famous neighbor, but it's a very nice object in its own right. It's at nearly the same distance (about 26,000 light years away), but only about 2/3rds as large at around 109 light years across. It's also a little younger, with estimates starting at around 12 billion years. M92 is much more compact than M13, and doesn't have the chains of stars.

Ras Algethi (Alpha Hercules): Variable and double star. Ras Algethi is the head of Hercules (usually portrayed as kneeling with his feet towards the North Pole) and is located near the brighter Ras Alhague, the head of Ophiuchus (the Physician). Ras Algethi is a binary star with a very nice color contrast. Most observers see some variant of orange for the 3rd magnitude primary Some observers say green for the 5th magnitude secondary, one of the few stars perceived as green. This is probably due to color contrast with the primary, since other stars of the same spectral classification don't look green. The two stars are a true binary, with an orbital period on the order of 4000 years. The primary is a red giant, one of the largest stars known: about 300 times the size of our sun at 350 million miles, but only about 4 times the sun's mass. The earth's orbit would be inside Ras Algethi. As with most red giants it is variable, changing almost a full magnitude over a period averaging about 90 days. Ras Algethi is about 400 light years away.

Some Resources for Observing, from the Both Eyes SIG

by Jon Stewart-Taylor

For the second Both Eyes SIG meeting, I put together a list of some resource. They might be of interest to the general membership. Many of you are probably familiar with at least some of these. If you have some you like which I didn't list in this article, please post them on the e-mailing list, or put them in a newsletter article of your own.

To learn the constellation patterns, locations, and bright stars, I like the H. A. Rey books. For adults I recommend "The Stars": https://www.amazon.com/Stars-New-Way-See-Them/dp/0544763440

Rey makes the constellations into stick-figures which mostly look like their name. That helped me tremendously learning the bright constellations. The main problem with the Rey figures is that sometimes he has to reach down to 6th magnitude stars to make the patterns. Too few us of regularly get 6th magnitude skies anymore.

For more detail I like the Tirion "Bright Star Atlas 2000". It works well for both unaided-eye and binocular observing, and can also be used with small telescopes (or big telescopes with finders similar to half a binocular): https://www.willbell.com/atlas/atlas1.htm

There are quite a few decent star atlases of this type. It doesn't matter too much which one you use, as long as you use it often under the sky.

A book which can help you do that is “365 Starry Nights” by Chet Raymo. As its name implies, there are 365 entries, one for each night in the year, which help you learn the skis night by night, week by week, month by month.

It’s available in the usual book sources (e.g. amazon https://www.amazon.com/365-Starry-Nights-Introduction-Astronomy/dp/0671766066) but it’s also available as PDF at various locations including https://openlibrary.org/works/OL531883W/365_Starry_Nights

An ephemeris will let you know about the , er, ephemeral events in the sky. The major astronomy magazines have lists each month (on line as well).

I’m quite fond of Guy Ottewell’s Astronomical Calendar, which is free on-line, and covers a full year. It’s a bit euro-centric, listing some events we can’t see from the US, and missing some we can. It’s one of the major sources for the Cape fear Astro club calendar.

The current year (and past years, if you want to check something) are available here: https://www.universalworkshop.com/astronomical-calendar-any-year/

Another good resources is the http://skymaps.com/ monthly sky maps http://skymaps.com/downloads.html on a single sheet front and back they combine a monthly planisphere-style star map, and ephemeris for the month, and a list of observing targets for unaided eye, binoculars, and small ‘scopes. The only real drawback is that they can’t be printed for a given month until the first of that month.

An interesting and very different approach to unaided eye astronomy is found in Fred Schaaf’s “Seeing the Sky”. You can look at a 48-page preview via Google Books here: https://www.google.com/books/edition/Seeing_the_Sky/QnXCAgAAQBAJ?hl=en&gbpv=1&printsec=frontcover

Schaaf presents lots of short chapters on many topics, and ends each with a series of questions to make us think about and improve our observing. For example, at the end of the first chapter (on the moon), the first question is:

> 1) At what exact time do you have greatest visibility of Lunar details? At what time in the twilight does visibility improve or worsen the quickest? How much does haze and the Moon’s angular altitude affect when these times occur?

A page with some resources for unaided-eye observing (with a slight British accent) is: http://www.stargazing.net/david/eyes/nebeglib.html

Make sure you don’t miss the follow-up page for more advanced unaided-eye observers: http://www.stargazing.net/david/eyes/neadvlib.html

The thing which will help your observing the most is to practice, to reinforce what you learn from your resources. Your brain has to learn to map the diagrams and charts onto the real sky, and that requires lots of practice.

Hope these resources will be useful to you.

It's The Least Wonderful (Astronomy) Time Of The Year!

by Karl

“What the heck is he talking about?” is probably what you are thinking, but I have several reasons to say that:

- ★ Evening twilight lasts too long
- ★ Morning twilight comes too early
- ★ Least hours of dark sky
- ★ DST means darkness comes 1 hour later

I didn’t include “biting insects” because they are around spring, summer and fall.

Those first 3 ★’s are due to the tilt of the Earth’s axis of rotation. Near the summer solstice, the north pole is tilted toward the Sun, resulting in later sunsets, longer twilights (evening and morning) and earlier sunrises.

Here are some numbers:

Date	Astronomical Twilight Begins	Ends	Darkness Duration
7/1	22:13	4:20	6h 7m
8/1	21:49	4:48	6h 59m
9/1	20:04	5:19	8h 15m
At winter solstice:			
12/21	19:38	6:44	11h 6m

So, that’s the story. Right?

Almost! I do have to acknowledge that if you are a lunar observer, this doesn’t apply. If you are a planetary observer, the windows are wider since you can start and end during twilight. And if you are a solar observer, well, other factor like daytime seeing enter into that analysis. Like the text books were fond of saying, “the proof is left to the student”.

Mars Moment

by Karl Adlon

Posted on Cloudy Nights by KiwiRay in Seattle, these two images were taken last Friday and he has this to say about them:

"I've started imaging Mars in the 40 minutes before sunrise, when it's above 30° altitude. It's been a nice time for seeing so far, and as a bonus, it's when the hummingbirds come out, which makes for some pleasant background sounds. I even had a curious hummer look down the tube for a few seconds the other morning.

Celestron Evolution 9.25 with 2x Barlow and ADC. ASI224MC camera."

Each issue in 2020, this space is reserved for something about Mars in our skies.

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THIS MONTH, Mars is in the early morning skies in the Southeast.

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Mid-July, Mars is about 13 arc-sec apparent diameter. This is more than ½ of its October 13 max of 22.4 arc-sec. It's a good time to start seeing what you can see.

There are better images on Cloudy Nights by amateurs but most right now are from locations south of the equator.

I picked these images because:

- ★ They are taken in the U.S.A. and from a more northerly latitude than CFAS..
- ★ They are taken with a moderately sized telescope.
- ★ And while monochrome cameras give higher resolution images, these were taken with a color camera.

I say: "Very Impressive!"

Editor's Note: Used in this Newsletter, "Cape Fear Astronomical Society" may be abbreviated "CFAS" or "CFAstro".

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