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.*
***January 2021***

## President's Report for January 2021

*by Jon Stewart-Taylor*

We had two December meetings. During a short in-person meeting at Battleship Park we successfully elected the 2021 slate of officers and adopted changes to the Constitution which have been waiting for an in-person meeting for 6 months. That night via Zoom we held our Annual Meeting. Karl led a look back at what we did during 2020. During the business half of the meeting we looked ahead to 2021.

Thanks to all who served in elected or volunteer offices under the difficult circumstances of 2020. Special thanks to Karl for simultaneously producing Cape Fear Skies and being AVP. Thanks to all serving during 2021, and especially to George for stepping up to be AVP.

Cape Fear Astro is beginning 2021 under mixed circumstances. The big metaphorical cloud is of course the continuing COVID crisis. The release of two vaccines raises hope and the promise of overcoming the virus. The practicalities of vaccine production and distribution mean we're probably going to be living under the COVID cloud until late spring or even through summer. We looked ahead to 2021 keeping that firmly in mind.

As 2021 president, I am planning to work towards three broad goals:

- ★ Completing the New Astronomer's Package.
- ★ Enhancing monthly meetings both for current members and for new members and visitors.
- ★ Meeting the challenge of public outreach under COVID, and after COVID.

During the annual meeting many of you raised issues which you'd like to see addressed this year, including:

- ★ Elections and Constitution modifications not necessarily requiring in-person voting under emergency circumstances.
- ★ Attracting and maintaining new members and visitors, including defining procedures for interacting with visitors.
- ★ Doing outreach while maintaining safety.
- ★ Increasing club activities and the participation of members.

Clearly these are ambitious goals, especially while under COVID restrictions. There were several suggestions made during the meeting which are steps in the right direction. Over the next couple of business meetings I'm looking forward to working towards meeting our goals.

**Due to the COVID-19 virus pandemic, we are now under "Modified Stay At Home Order". No CFAstro public events are planned. Meetings will be via Zoom. Member observing as noted, with "social distancing".**

## January 2021

Date – Event – Time

02 Earth at perihelion; 0.9833 AU from the Sun

03 Quadrantid meteors; ZHR 110; peak Jan 3 8h; 3 days before Last Quarter

06 Last Quarter Moon

**08 Club Observing at Starfields; Shiloh Road Ivanhoe NC; 05:30 PM**

**09 Club Observing at Starfields; Shiloh Road Ivanhoe NC; 05:30 PM**

**10 Cape Fear Astro monthly meeting; 07:00 PM; via Zoom**

10 Mercury, Jupiter, and Saturn within circle of diameter 2.39°; about 13° from the Sun in the evening sky; magnitudes -1, -2, 1

13 New Moon; beginning of lunation 1213

**15 Club Observing; 05:30 PM; TBD**

**16 Club Observing; 05:30 PM; TBD**

20 First Quarter Moon

24 Mercury at easternmost elongation; 18.6° from Sun in evening sky

25 Moon 0.31° NNE of M35 cluster; 146° from the Sun in the evening sky

28 Full Moon

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

## January Program

First, a Request! A Request! Please send any images of the Great Conjunction that you may have taken to George (w3gp@me.com) and your newsletter Editor (kmja79@yahoo.com).

Any picture you have would be good. This is NOT a competition. We would like for you to say a few words about the picture during the Zoom meeting. If you can't attend the meeting, could you send some words with the picture, please?

No picture? Maybe you would like to tell us about your observations. Likewise, if you can't attend the meeting, could you send some words, please?

The January Program will be “Reminiscing About the Great Conjunction” when Saturn and Jupiter appears so close together. Hopefully, everyone saw the conjunction (more than once) and would like to tell us what their thoughts were and are regarding this event.

## Election Results

The current Officers, as elected in-person on December 13th, are:

| | |
|---|---|
| President: | Jon Stewart-Taylor |
| Vice-Pres: | Skip Hagers |
| Associate VP | George Pappayliou |
| Secretary: | Bill Cooper |
| Treasurer: | Ben Steelman |

Appointed positions are:

| | |
|---|---|
| ALCOR | Hank Lyon |
| Newsletter Editor | Karl Adlon |

## Messier Marathon

“Messier Marathon is a term describing the attempt to find as many Messier objects as possible in one night. Depending on the location of the observer, and season, there is a different number of them visible, as they are not evenly distributed in the celestial sphere. There are heavily crowded regions in the sky, especially the Virgo Cluster and the region around the Galactic Center, while other regions are virtually empty of them. In particular, there are no Messier objects at all at Right Ascensions 21:40 to 23:20, and only the very northern M52 is between RA 21:40 and 0:40. This chance effect leads, at considerably low northern latitudes on Earth (best around 25 degrees North), to the chance to observe all 110 Messier objects in one night! This opportunity occurs once every year, around mid- to end-March; the best time to try is of course when the Moon is near its new phase.” From SEDS.

## A Look Ahead

**March 12 & 13** – Messier Marathon Dates

“The Statewide Star Party will be held Friday, **April 16** and Saturday**, April 17**, 2021. This year's theme is "Moon and Mars."“ (Pandemic dependent, of course)

*Students for the Exploration and Development of Space (SEDS) is an international student organization whose purpose is to promote space exploration and development through educational and engineering projects. SEDS is fostering the development of future leaders and contributors in the expanding space industry.*

For me, when I was living in the cold, cold north, the Marathon was an excuse to put on layers of warm clothes, dust off the telescope and join other observers. A couple of them were going for the Marathon. Many of us, Karl included, were there for a half marathon. On a really cold night I quit around 11 PM. On a better night, about 1 AM.

SEDS and others have a list of the recommended order to attempt to see them all or as many as possible in one night.

Want to see all of the Messier objects in 2021? You can always spit them up. Do half of them at the Marathon without skipping any. About a half year later, do the remainder.

The Messier Marathon was started in the 1970s. This was before the invention of Digital Setting Circles and later GoTo computerized telescopes. If you want a more challenging marathon, just use mechanical setting circles and star-hopping. I, however, don’t object to using today’s technology. And if you want to use digital cameras, go for it!

Whatever you do, don’t forget: **HAVE FUN!**

## Statewide Star Party

The general information on this comes from:

https://www.ncsciencefestival.org/starparty

I have not heard back from Carolina Beach State Park on their plans, if any. At this time and with the coronavirus still causing problems, that is not unexpected.

So, please put it on your calendar – in pencil!

## Outreach During 2021

*by Jon Stewart-Taylor*

One of my three goals for this year is meeting the challenge of public outreach during COVID and after COVID.

As I write this at the very end of December 2020 it appears very likely we'll be living with COVID most probably until summer, and possibly until autumn. This implies we'll be having at least 5, possibly up to 9, more months during which we can't do what we've traditionally done for outreach: Show the public heavenly objects up close and personal.

How do we reach out to our public? Our activities will need to be accessible but safe. We will need to find activities which are attractive to people, but not require physical closeness. I see two branches on this path: remote activities using software like Zoom, or in-person, but physically distant, activities. It may be possible to combine the two to create new types of activities.

We can take some of the things we've done in person or new events which we can do in-person, and do them remotely. Possibilities include:

- ★ How to get the best out of a new telescope.
- ★ What is an astronomy club for?
- ★ Seasonal introductions to the skies (winter, spring, summer, fall).
- ★ New discoveries in astronomy.
- ★ Zoom or stream a view of a bright object through a telescope.

There are many other possible events we can hold. We might even consider allowing the public to attend our monthly meeting presentations. I'd like us to do at least one remote outreach by the end of February.

There are also in-person activities which we can socially distance rather than (or in addition to) doing remotely For example:

- ★ Use technology to display telescope views in large format to public.
- ★ Solar system model, either self-guided, or with a Zooming tour guide.
- ★ Displays the public can encounter in small groups, e. g. eclipse models.
- ★ Laser-guided sky tours, with enough lasers so people don't have to crowd.

Again, there are lots of possibilities. These are a bit more limited than purely remote activities, because we have to find appropriate locations, and they are more subject to weather. They can still give us an opportunity to safely reach out to educate and entertain people.

I plan to include at least a short discussion of outreach at the January business meeting. I expect there will be some discussion via the e-mailing list as well. Please don't hesitate to speak up with any ideas or thoughts. We'll probably have a chance to try pretty much everything before the end of the year.

"2020 came in with a bottle of cheer,
And big plans were made for the coming year.
But new words appeared like Virtual, Pandemic and Zoom,
And no toilet paper in the bathroom!
So, let's escort 2021 in for a brand new year,
And 2020, don't let the door hit you in the rear!"

*Author Unknown*

## The Great Conjunction

I posted this previously but putting it in the newsletter makes it a little more “official”.

Taken with a telephoto lens; first zoomed out, then zoomed in.

Jupiter and Saturn above the trees.

Saturn is above and right.

Moons Calisto and Io (Ganymede next but too close to Jupiter to see), then Jupiter and Europa. Further is a background star.

That is what I sent previously.

Now “Great Conjunction” made me think of another Conjunction: that of a triple conjunction of me, astronomy and astronomy club!

Oh sure, I knew the Great Conjunction was coming. I remember when I was a youngster and Jupiter was east of Saturn I wondered at what they would look like together. With computers and planetarium programs I was able to see years ago that this was coming. Then, as it approached, I lost most of my interest. If it weren’t for being in CFAS, being Editor and feeling that an OK picture would be nice for the newsletter, I wouldn’t have taken these pictures.

So there is my conjunction. Have you considered your own conjunctions, not necessarily astronomical?

# Some Interesting Dates and Some of Their Significances

*by Karl Adlon*

240 BC - **Eratosthenes** devised a clever method to estimate the circumference of the Earth

1589-1592 – **Galileo** drops spheres of different masses and demonstrates they fall at the same rate

1609 – **Galileo** makes his first telescope

1666 – **Newton** discovers that white light is composed of a spectrum of colored light

1668 – **Newton** invents the reflecting telescope that bears his name.

1687 – **Newton** publishes his *Principia (Philosophiæ Naturalis Principia Mathematica)*

1814 – Spectral lines lines were first observed in 1802 by the English physicist William Hyde Wollaston but are named for the German physicist Joseph von **Fraunhofer**, who from about 1814 plotted more than 500 of them and designated the brightest by the letters A through G, a system of identification still in use.

1838 - Friedrich Wilhelm **Bessel** obtained a value of 10.3 light-years to 61 Cygni (first star distance measurement)

1850 - First photograph of a star (Vega)

1872 – Henry **Draper** is first to photograph the spectrum of a star, Vega

1901 - Dutch astronomer Jacobus Kapteyn used photographic observations to assemble a catalogue with the position and distances (obtained from parallax) of 58 stars

1910 – The catalogue grew to comprise 365 stars by 1910.

1912 – Henrietta **Leavitt** discovers the relationship in Cepheid variables that the period of the cycle of fluctuation in brightness is related to the star's absolute magnitude

1913 – **Hertzsprung** and **Russell** independently develop the relationship between absolute magnitude and spectral type

Points:

- ★ It has been known that the Earth is spherical for over 2,000 years.
    - *Editorial comments/thoughts: Why do some people believe the Earth is flat, even after being taught in grade school that it is spherical? Even after Apollo astronauts show pictures of Earth?*
- ★ Both Galileo and Newton were geniuses. Both worked in several fields of study and made scientific advancements. As amateur astronomers, we probably think more about their telescopes and observations, though.
    - *Editorial comments/thoughts: Websites, even college websites, cannot be trusted on their own. I recently read on one that should have known better that Galileo invented the telescope. He did make some improvements to the telescope after obtaining one. Of course, his aiming the telescope at the night sky and reporting what he saw really made him prominent in the field of astronomy.*
- ★ Perhaps underappreciated is the role of photography in the advancement of our understanding of stellar physics. During this time frame, glass plates were used. Recent efforts have taken place to collect and preserve the plates since they captured data from ~100 years ago and allow changes to be determined.
    - Photographs of star fields permitted the accurate determination of the apparent magnitudes of a large number of stars.
    - Photography permitted the parallax of nearby stars to be measured more accurately and in larger numbers from which the distance to the stars could, by trigonometry, be determined. The stellar distance combined with the apparent magnitude allowed the absolute magnitude to be calculated. It also permitted the study of variable stars.
    - Photography permitted the spectra of stars to be recorded and studied, the results of which permitted the classification of stellar types.
    - The data from all of the above led to the Hertzsprung-Russel diagram, the discovery of the Main Sequence, dwarf stars, giant stars and more.

I knew bits and pieces of this but coaching Science Olympiad students caused me to look into these things further and lead to my appreciation of how they all went together.

www.astroleague.org

## Astronomical League Update

*by Hank Lyon*
*Astronomical League Correspondent (ALCor)*
*hlyon8448@gmail.com*

If you witnessed the Great Conjunction of Jupiter and Saturn and would like to commemorate the event, a downloadable certificate accessible though the AL website home page is now available. Also available is the 2021 AL Calendar. This is a collector's edition that celebrates the Astroleague's 75th anniversary (November 15, 1946). Calendar proceeds benefit ALCon Jr., the youth portion of the AL national convention (ALCon 2021) which will be held in Albuquerque, NM this coming August.

Switching gears, I point you to the article in the December 2020 *Reflector* about Herschel objects. At some juncture, there is a good chance your observation or photography interests will take you further in the "deep sky" direction. While there is clearly a wealth of enjoyment with the beloved objects on the Messier list, the desire to go "deeper and fainter" is likely to occupy your thoughts at some point. A great start for observing projects of this nature is the AL Herschel 400 Observing Program. The AL built this program as a "next step" which builds upon the skills that observers develop as they work through the Messier Catalog. The objects included in the Herschel 400 may take a little more effort to locate and confirm but all are obtainable with at least six inches of aperture from moderately light polluted skies. Of course, good seeing and transparency will be a must. If you're not ready to embark on this challenge or the Messier Catalog remains a keen interest, there is also an observation program to assist you with that endeavor.

Throughout the New Year, we'll take a more detailed look at the AL observing programs and explore some of the general and specific requirements that make participation valuable and rewarding. In the interim, you may visit www.astroleague.org and click on *Observing Programs* in the home page Navigation pane to obtain additional information.

Happy New Year!!




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

**CFAS Correspondence:**

Please contact the society at: CFAS, P.O. Box 7685, Wilmington, NC 28406

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).

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**CFAS Officers:**

Officers

| | |
|---|---|
| President: | Jon Stewart-Taylor |
| Vice-Pres: | Skip Hagers |
| Associate VP | George Pappayliou |
| Secretary: | Bill Cooper |
| Treasurer: | Ben Steelman |
| ALCor | Hank Lyon |

Chairpersons

Web Master:

**Dues:**

Dues for 2021 are $25 for Individual and $32 for Family Membership.

**Contact Us:**

You can contact CFAS at info@capefearastro.org

Our website is http://www.capefearastro.org/