CAPE FEAR Skies

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

November 2020

President's Message

by Jon Stewart-Taylor

A couple of Big Things have happened. First, Cape Fear Astronomical Society is now a 501 (c) 3 tax-exempt non-profit. More on what that means to us in another article in this newsletter.

The other Big Thing is that the officers of the Cape Fear Astronomy Club held a meeting at which the Dissolution of the Club was approved, as was a Plan of Dissolution. The Club Vice President was assigned to carry out the Plan. As soon as i receive the signed Plan, I'll file it and the Articles of Dissolution with the NC Secretary of State, and the Club will be legally terminated. The Cape Fear Astronomical Society will continue on, with the members and goals which made the Club a good thing to be a part of.

Elections will be held in December, and nominations are still open. More on that in another article, too.

We're moving into the fall season, when skies are usually better than thay have been all summer. Mars is beginning to recede after the best opposition for many years, but it will still be very good for some time yet. If you haven't had a chance to see it, catch it soon. Jupiter and Saturn are closing in on each other for their very close approach in December. Keep an eye on them as the separation diminishes.

Finally, the November presentation looks like a good one. Our speaker will be Sydney J. Polak, Physics Major, UNC Wilmington, and his topic will be "Building a Hydrogen-line Radio Telescope to Map the Milky Way's Galactic Plane". I'm looking forward to it.

A radio telescope at Green Bank in West Virginia

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".

November 2020

Date – Event - Time

02 Jupiter – Saturn at heliocentric conjunction; 07:00 PM UTC; longitude 301.8 deg.

06 Club Observing; 05:30 PM; TBD

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08 Last Quarter Moon; 01:46 PM UTC

08 Cape Fear Astro monthly meeting; 07:00 PM; via Zoom. The program is "Building a Hydrogen-line Radio Telescope to Map the Milky Way's Galactic Plane"

10 Mercury at westernmost elongation; 05:00 PM UTC; 19.1 deg. from Sun in morning sky

13 Social Distancing Star Party; 05:30 PM; at Starfields, Shiloh Road, Ivanhoe, NC

14 Social Distancing Star Party; 05:30 PM; at Starfields, Shiloh Road, Ivanhoe, NC

15 New Moon; 05:08 AM UTC

17 Leonid meteor shower; ZHR 15; peak Nov 17 4h; 2 days before New Moon

21 First Quarter Moon; 04:45 AM UTC

30 Penumbral Lunar eclipse; 09:31 AM UTC

30 Full Moon; 09:31 AM UTC; Beaver Moon

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

Nominations and December Elections

by Jon Stewart-Taylor

Nominations for the election coming up in December are still open. New nominations can be made via the e-mailing list or at the next (virtual) meeting. So far the nominations are:

President: Jon Stewart-Taylor

Vice President: Skip Hagers

AVP: George Pappayliou

Secretary: Bill Cooper

Treasurer: Ben Steelman

Although there's a candidate for each position, please don't hesitate to nominate someone you feel would be a good fit for the position. Or, if you'd like to run, let someone know to nominate you.

Voting for the elections and the pending Constitution modifications must be in person. We're looking for a place to hold an in-person, but safe and socially-distanced, meeting. One suggestion we've received is to meet at one of the local parks under a picnic shelter in the event of rain. Other suggestions are very welcome. If all else fails, we can hold them in the Quonset hut here in Saint Helena: it will at least be dry, though not necessarily warm. If you have other possibilities, please post them to the e-mailing list.

Cape Fear Astro is Now a 501(c)(3) Corporation: What does it mean to us?

by Jon Stewart-Taylor

Cape Fear Astro has received notification that we are now designated an tax exempt nonprofit under section 501 (c) 3 of the Internal Revenue Code. This caps a nearly two-year-long process originally started by Billy Kidney, which led to the creation of a new Corporation, dissolution of our old Corporation, and lots of paperwork guided by George Pappayliou. Thanks to both Billy and George, and all the other people who have contributed to this major achievement for Cape Fear Astro.

But, other than the amount of work required, why is this a major achievement? What does it mean to us as members of Cape Fear Astro? What does it cost us, and what do we gain?

What is required of us is pretty straightforward, and falls into 6 basic categories. In the items below, “we” and “our” mean Cape Fear Astro:

- ★ Actives and earnings should be directed towards our exempt purpose.
- ★ Lobbying must not be a substantial part of our activities.
- ★ We must not participate in or contribute to a political campaign for or against candidates running for public office.
- ★ We must pay taxes on “Unrelated Business Income”.
- ★ We must submit a 990-N “postcard” tax return every year.
- ★ We must actually do the stuff we told the IRS we do.

Most of those aren’t much of a “cost” to us, since we do try to focus on our purpose, don’t make money by offering goods or services, and aren’t likely to get political. There is some additional record-keeping required to show we’re meeting the above requirements of the IRS, and complying with state law. Most of it is the same stuff we’ve been doing anyway: keeping track of income/expenses, and keeping minutes of meetings and records.
Benefits of being an exempt organization include:

- ★ We are exempt from most Federal taxes.
- ★ Contributions, grants, donations and gifts may be tax-deductible by the donors.
- ★ We may be exempt from state taxes.
- ★ Reduced postal rates on bulk mailings.

There are others, but we are small enough (in numbers and money) that most of the others probably won’t apply to us.

Possibly the greatest potential benefit of our exempt status is the tax-deductible contributions and donations. This include your yearly dues, if you are allowed to itemize your deductions. In fact, George advises that exempt status applies from the date of incorporation, so if you itemize, you can use it on both 2019 and 2020 returns.

The same is true of donating things (telescopes, equipment, buildings), property, and so on. George notes that organizations and businesses that allow us to use facilities or equipment for meetings or other activities may also be entitled to take tax deductions (although this doesn’t do anything for nonprofits like churches and UNCW).

To sum things up, the purpose of the deduction is to encourage people and organizations to donate to Cape Fear Astro for benefits in addition to the basic charitable reasons for supporting us. In order to get the most out of this, we’ll have to do some extra work. We’ll have to show interested donors that we’ll be able to put their donations to work for the purposes intended.

We can wait for people who are inclined to donate anyway, and reward them with deductions when they do. But, to get the most out of our status, we’ll have to reach out to people and organizations. We’ll have to seek out grants for implementing projects and program. We’ll have to reach out to institutions and

companies who can provide us with goods or services which will help us pursue our exempt purpose.

It will require extra work to attain these extra benefits. to open doors which would otherwise be firmly shut without having been granted exempt status. It gives us another tool to work towards helping ourselves and the public learn about, see, and experience astronomy.

Logo Source: AL Website

Astronomical League Update

by Hank Lyon
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The Astronomical League (AL) recently announced that The Royal Astronomical Society of Canada's (RASC) *Observer's Handbook 2021* is now available through the AL Store ($24).

For over the past 100 years, this has been a popular 350 page reference for both astronomical events that occur within the year as well as astronomical data and other information that does not vary from year to year. A sample of yearly data includes: the rise/set times for Sun and Moon; eclipses; location of the planets and bright asteroids; periodic comets; times of meteor showers; star occultations by the Moon/asteroids; orbital positions of select moons of Jupiter and Saturn and cycle information for many variable stars. Among the multitude of recurring data is: orbital/physical information for the planets and their moons; astronomical and physical constants; information on filters for astronomical observing; light pollution and sky transparency information and 40 pages of tables dealing with stars, star clusters, nebulae and galaxies. If you're interested in placing an order, the AL suggests doing so without delay as the bulk order is typically exhausted by December of each year. From the AL home page below, click on *Store* in the Navigation list and look under *New Products*. The RASC *Observer's Calendar – 2021* is also available for $18. Either of these might make a good stocking stuffer suggestion for your significant other.

Several of you requested digital copies of the AL's quarterly magazine *Reflector*. As I've talked to some of you I've learned that hard copies were delivered in some cases where the digital version was specified. Although it can run a quarter behind, the digital *Reflector* is available on the AL website for download. Just click on *Reflector Magazine* in the Navigation list and you can browse/download current and past issues.

www.astroleague.org

A Place to Report Stolen Astronomy Equipment

Steve Hilliard alerted me that Cloudy Nights has a new link to report any stolen astronomical equipment. https://www.cloudynights.com/topic/730840-stolen-astronomy-equipment/

It would be great if no one ever needed to use it, but here it is just in case.

Or, if you think you have identified possibly stolen equipment, this is one spot to check.

THE 10 BEST THINGS TO SEE IN THE FALL NIGHT SKY

Taken from High Point Scientific, for details see:
https://tinyurl.com/y3do3slc

And, here is the list:

1. M15, A GLOBULAR FOR PEGASUS
2. M31, A GALAXY FIT FOR A PRINCESS
3. ALMACH, ANDROMEDA'S EASY DOUBLE
4. MESARTHIM, THE RAM'S BEST MULTIPLE STAR
5. ACHIRD, THE JEWEL IN CASSIOPEIA'S CROWN
6. NGC 457 - THE OWL TAKES FLIGHT
7. A SCATTERING OF STARS (near Mirfak)
8. ALGOL, THE DEMON STAR
9. TWO FOR THE PRICE OF ONE (Double Cluster)
10. THE STUNNING BEAUTY OF THE SEVEN SISTERS (The Pleiades)

A Few Corona Virus Recovery Tips

If you haven't used you equipment in a while, consider doing the following:

- ★ Make and break, a few times, electrical connection to clean the contacts
- ★ Check your optics' cleanliness
- ★ Run your mount's electronics including features you will be using, just in case you forgot how
- ★ Read your mount's Instruction Manual

Have I done these? The first 3: YES and the last one I am still doing and discovering things that will make using it much simpler!

Mission Accomplished! (MOL)

by Karl Adlon

I have wanted to get a decent picture of Mars for some time (years). Last night (Oct. 27, 2020) wasn't the best, but good enough to give it a good try.

Why did it take so long? Well, it wasn't *just* procrastination, because I *did* have a mechanical problem with my mount. But many times I decided:

★ The forecast was good, but the forecast turned out to be *wrong*.
★ The forecast was for clouds, but I wake in the wee hours and I can see stars.
★ I have an early morning appointment
★ I'm too tired after doing some work around the house or volunteering

and so, I put off imaging Mars.

Until now.

I parked the car diagonally across the driveway to block car lights from the street that ends there. I rolled the scope out, got it aligned and aimed at Mars and connected the camera and laptop.

I took the first video at 9:12 and the last ended at 11:04. About half way through, I saw clouds in the west, which you can see in the photo below.

I took a total of 31 videos using FireCapture (FC), which took up 45 Gig on the hard drive. After recording about 1/3 of them I added a 2X barlow and those gave the best result. I set FC to capture 10,000 frames and stop recording.

The last several videos are not useable, with really poor seeing and, sometimes, Mars not showing on the screen due to the clouds rolling in. Clouds ended the night and I returned the scope and car to the garage.

I had brought out a step stool to check corrector dewing in between taking videos. I had also placed the laptop on a folding chair. After a while of sitting on the concrete to adjust FC, it occurred to me that I should be sitting on the stool.

One aspect of last night that I enjoyed, as opposed to deep sky imaging, is the Moon being out. The impending clouds were easily visible as was the parts of my equipment spread out on the driveway. And when I heard the various noises of the night; dogs, people talking, birds, insects, etc., a ittle light was welcome.

In the morning, I used Autostakkert3 (AS3) for stacking. To save some time, I ran AS3 to analyze the recording quality. Only ones with the best quality were stacked at this point. I selected the best 1%, giving 100 frames from a 10,000 frame video. I had tried more than 1%, but the program took longer to run and the results were essentially the same.

Then I used the wavelet function in Registax6 to bring out more detail hidden in the image. This involves trial and error for me and also takes dome time at the computer.

Mars is really small and far away. It is only "close" in approximately 26 month periods.

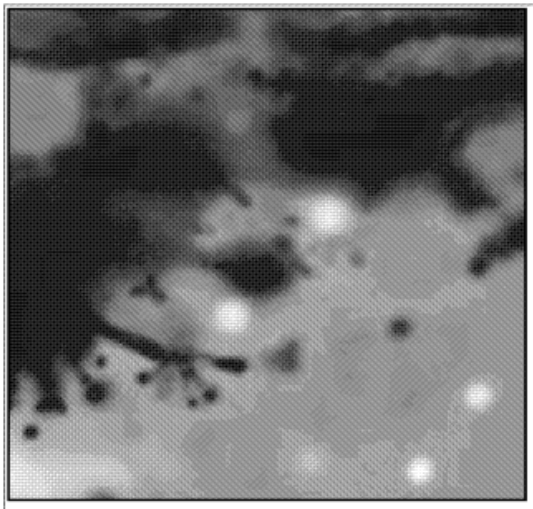
Last night it was about 42,000,000 miles away - and getting further.

This is probably the best I'll do unless really great observing conditions happen in the next few weeks.

MOL: More Or Less, I'm happy with the results. Steadier skies would have given me more detail on the surface. And I wish Syrtis Major was turned this direction, but I take what I got.

And what I got is on the next page.

Sky & Telescope's Mars Profiler identifies the central feature in this image as "Solis Lacus".



Solis Lacus, the "Eye of Mars"

Central latitude: 28.0 south.
Central longitude: 90.9 west.

An area of great interest to observers due to its great variability and a tendency for dust clouds is an albedo feature called Solis Lacus (Lake of the Sun). Also known as the "Eye of Mars" because it sometimes seems to resemble an eye, this changeable and elongated area was first observed and drawn by Jacques Philippe Maraldi in 1704, though it was originally named by Giovanni Virginio Schiaparelli. Solis Lacus is roughly 500 miles long and 300 miles wide. The records are not complete, but it appeared to remain as originally observed until 1926 when the longer axis was found to be north-south. Later that year, Eugène Michael Antoniadi observed it as three separate patches of dark features, with the central one divided by a dusky bridge. It then turned back to more normal appearances. In the Mars 1939 apparition, Solis Lacus again changed; for instance, it once was observed to be made up of a number of small dark spots contained in a generally dusky area.

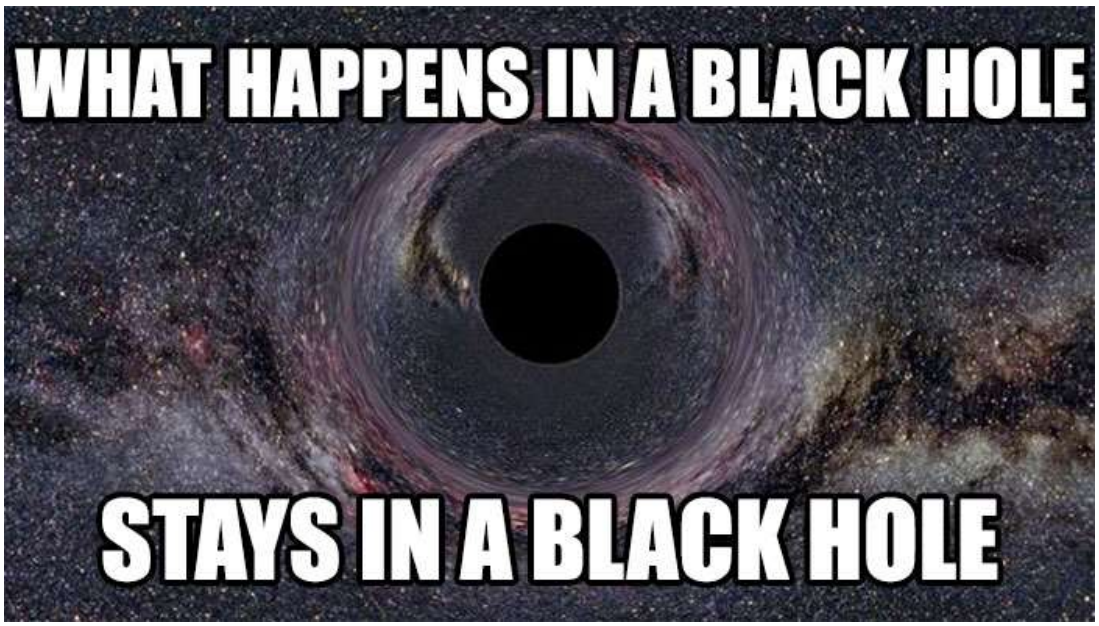
The Great Dust Storm of October 1973 started in the Solis Lacus region and grew rapidly to enshroud the entire planet. These kinds of global dust storms are quite rare, with only five reported in 1956 and later. The dust storms that happen here and at other places in the southern Martian hemisphere are larger and more dramatic when they occur during southern summer.

One great dust cloud that started in Solis Lacus soon after the close approach in September 1988, was on Thanksgiving Day in 1988. This Great Thanksgiving Dust Storm, as it now known, developed along the northern edge of Solis Lacus and in the weeks that followed, it covered about 70 percent of the southern hemisphere.

Solis Lacus can not only change its shape, but can also appear lighter at times. Use a red filter to best notice any brightening. You never know when you might be first to observe a new dust cloud.

At left is an article from ALPO's "The Strolling Astronomer".

I only wanted a "decent picture of Mars", but learned more than I expected!



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

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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).

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