CAPE FEAR Skies

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

December 2019

Vice President's Report

by Jon Stewart-Taylor

Our last planned public event was at the Cape Fear Fair on November 1, 2, 3. Karl, Skip, Kat, Steve, Kathleen, and I spent various amounts of time at the booth, and interacted with well over 100 people: a small number compared to the thousands at the Fair, but quite a few by Cape Fear Astro standards.

See photo on last page.

We gave away about 100 free star charts (SkyMaps.com November), and quite a few business and "buying a scope?" cards, and even talked to some people in depth about astronomy, the club, and especially public observing sessions.

We learned a number of things from the experience. Number one, always have lots of free things to give away. Number two, be prepared to make a fool of yourself imitating a carny "barker". Both increased the number of people connecting with us, and sometimes led to additional, more in-depth interaction.

We'll probably try again next year, but there's a lot to learn from this year to improve on next year.

This is my last Vice-President's report, since Skip will be taking over as VP. Skip has done yeoman's work at public events over the last several years, and I'm looking forward to what he'll make happen over the next year.

Thanks to all for all your support and participation in public outreach over the last 12 months.

Jon

Cape Fear Astro Calendar

Events marked with ★ **and bold** are Cape Fear Astro events for the current Month.

December 2019

04 First Quarter Moon

★ **07 Holiday Celebration, (SATURDAY)**
Pender County Extension Service
801 South Walker Street, in Burgaw

08 Earliest Sunset

11 Moon 3 deg N. of Aldebaran

12 Full Moon

13 Moon 1.5 deg SE of M35

14 Geminid Meteor shower

★ **14 Observing at Starfields**

15 Moon 1.3 deg NNE of Beehive (morning)

19 Last Quarter Moon

★ **20 Observing at Starfields**

★ **21 Observing at Starfields**

22 Ursid Meteor Shower

★ **22 Observing at Starfields**

22 December Solstice

23 Moon 3.4 deg NNE of mares (morning)

26 New Moon

27 moon 1.3 deg SE of Saturn (very close to sun)

★ **27 Observing at Starfields**

★ **28 Observing at Starfields**

29 Moon 1 deg SE of Venus (evening)

Tourist Traps #4: Fall and Early Winter

The deep-sky objects which make good public session targets and therefore get visited over and over ("tourist traps") generally have most if not all of the following characteristics:

- ★ 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.

This installment of Tourist Traps covers some objects for Fall and Early Winter. It covers 2 globular clusters, the best galaxy visible in the northern hemisphere, and a double star. They're all pretty easy to find even under public session conditions, and all well worth showing at public sessions.

M15: GC; the Fried Egg Cluster in Pegasus. This globular cluster is within about 6 degrees of the reddish star Enif in Pegasus. It's always a little further away from Enif than i think, a full one-and-a-half Telrads or most of a finder FOV to the north-west. It's unusual for a globular cluster in that it has a very bright core with a much fainter ring around it, giving rise to the "Fried Egg" name. Studies with very large scopes have found a planetary nebula inside the cluster. M15 is a source of X-rays, which implies it contains a neutron star (possibly the origin of the planetary nebula) or a black hole. M15 contains about 300,000 stars in a sphere only about 125 light years across, and is fairly distant at 40,000 light years away.

M2: GC; Aquarius. M2 is often overlooked at public sessions with M13 and M15 visible at the same time. It's also in an area of the sky without close guide stars. Despite that, it's not too hard to find, and in 4" and larger scopes it's actually quite a nice cluster. Under very dark skies, M2 is right at the edge of unaided-eye visibility. Under public session conditions, it's easily visible in binoculars or a finder. In contrast to the "fried egg" of M15, M2 has a nearly uniform surface brightness. M2 contains about 300,000 stars. It is bigger than M15 at about 170 light years in diameter, but it's also further away: 50,000 light years.

Almach: Gamma Andromeda; multiple star. Under public session conditions this is a fine double, bright and with very attractive contrasting colors; yellow or orangish and greenish-blue. From my Chapel Hill back yard, it was elongated at 45X, and widely split at 100X. In a larger scope with very good optics, you may be able to split the fainter (blueish) star into two, but the orbit is extremely elliptical with a 61 year period. Since it was at its greatest separation in 1982, 34 years later the separation is just past minimum. in 2020 the pair will continue to grow further apart: maybe enough for public sessions. Using a spectroscope, astronomers have determined that there is a fourth component, orbiting the brighter star of the blue pair. It is at a distance of around a million miles away from it's primary (about a 100th of the distance from Earth to the sun), and orbits in about 3 days. The yellow and blue pair have an extremely long orbital period: they haven't changed position relative to each other for almost 150 years. The whole system is about 200 light-years away from us.

M31, M32, and "M110": The Great Andromeda Galaxy and satellite galaxies; Andromeda. This is a true showpiece, and merits a visit under practically any conditions, and with practically any instrument. M31, the main galaxy, is visible to the unaided eye in even moderately dark skies, and with binoculars or a finder under almost any conditions. Although it is a spiral galaxy it's tilted away from us so through most amateur scopes not much of the spiral is visible. Especially under public session conditions, it looks like an elongated smear of light.

Compared to other galaxies visible from the northern hemisphere, it's enormous: under dark skies seen through binoculars it's over 4 degrees across. The main reason it's so large is that it's close. At 2.5 million light years away, it's the nearest spiral galaxy. However, it's also a large galaxy in absolute terms. With about 300 Billion stars and a diameter of 150,000 light years across, it's one of the largest known spirals. M31 is about 50% larger than the Milky Way.

The great spiral galaxy alone is worth a long visit, but it has some neighbor galaxies which may be worth pointing out as well. These are all gravitationally bound to M31. In an eyepiece which gives a field of view of one degree or more, you can fit 2 other galaxies in the same field. M32, a dwarf elliptical galaxy, is nestled close to M31. Close is a relative term in this case: it's about 20,000 light years to the south, and about 2,000 light years in diameter. Under most conditions it's a featureless fuzzball, the millions of stars blurring together. M110, although also classified as an elliptical, is a long thin needle of a galaxy. It also contains about a million stars, and is visually about a half degree away from M31 on the opposite side from M32. The designation "M110" is in some dispute. Messier never published this galaxy in any of his catalogs, but he drew it on a chart showing M31 and M32. Some modern astronomers feel it should be included (and makes the Messier catalog a nice round number). Others insist that if he didn't publish it, it doesn't belong. I prefer to include it.

Next installment will cover more winter objects, and maybe some for early spring.

November Meeting Presentation

by Scott Spike

John Holloway of The Learning Center at PARI (www.pari.edu, 828 862-5554) visited to describe the history of the facility, the organization's educational mission, and look for opportunities to work together.

- ★ The facility has International Dark Sky Certification, with magnitude 6-6.5 skies, and steadiness of 2-4 arc seconds.
- ★ School groups can visit for free.
- ★ Amateur groups can set up field study programs, allowing remote utilization of the facility's radio telescopes. (12 Meter, 4.6 Meter & two 26 Meter) Fees can be as low as $25/day for training and, once trained, use time is around $25/hour. Scopes are not heavily utilized, looking for users.
- ★ Programs are available to Boy Scouts and Girl Scouts to get all astronomy badges in one weekend.
- ★ PARI has the 2nd largest collection of astronomical plates (Approx. 497,000 plates); "SCOPE" program is cataloging plates and citizen scientists can participate in the program.

See flyer below.

15x70s @ 3:30 A.M.

by Karl Adlon

I woke up in the wee hours on the morning of Friday, November 22. This was not unusual. What WAS unusual: I got dressed, including warm jacket (42 degrees out) and knit hat, grabbed my rarely used binoculars and headed out the back door.

Our lot backs up to a pine forest, not more houses (yay!). The lot next to us is vacant and a streetlight shines diagonally across the back yard. I grab a patio chair and position it in the grass out of the streetlight light. The Pleiades are up in the west, but first I need to adjust the binos for my eyes. I start with Rigel, then some fainter stars.

These are not the best binos, but I'm frugal (cheep).

Since I'm in the "neighborhood" I decide the Orion Nebula should receive some attention. A quick look and I realize I have to so something about the jittery view. I turn the chair sideways to Orion and rest my left elbow on the chair back. That's better. A decent view but sky transparency is only average at best. I look a while, then turn the chair and move on to the Pleiades.

I admire their number of blue stars. Given the skies and my eyes, I don't spend much time trying to see the reflection nebula. I do note that the Pleiades span a little less than 1/2 the width of the bino view.

Lowering the binos I look around. Cassiopeia is to the north, can I see the Double Cluster? Yup, there it is. It's the view I would get under better skies with a better, larger instrument, so I decide to scan along the Milky Way.

Lots of stars along the way when I come across three stars in a row. That can't be Orion's belt. Looking above the binos I see it's not. My only thought is " huh" and I move on.

Home is now 7.5 degrees further south, So the stars of Canis Major are now more interesting. I come across a small bright patch. Then I look around the area and note that it's easy to return to it. What is it? I note that it's below and a little east of Sirius. I decide, since I starting to get a little chilled, I'll go look it up in Stellarium.

M41. Yes, that's looks like what I saw. I don't remember seeing it before. Maybe a quick look during a previous Messier Marathon.

Jupiter-Venus Conjunction Report

Jon posted several images of the Venus-Jupiter conjunction and here are excerpts from those posts. -Karl

The close conjunction going on over the last several days has been clouded out here tonight, so here are some cell-phone images i took over the last couple of clear(ish) nights.

These have been shrunken to make them fit under the e-mailing list size limit. If you'd like a larger one, let me know and I can e-mail directly.

In some of these, you can see not only Venus and Jupiter, but also Saturn in the upper right, and sometimes Fomalhaut between Jupiter and Saturn.

Jon

Jon,

It's nice to see Venus returning to the evening sky in such dramatic fashion. Nice images, I really like the last one.

Scott

Hi Scott.

Thanks for your kind words. All four were taken with an iPhone 5s (thanks, Kat), with a broken lens no less.

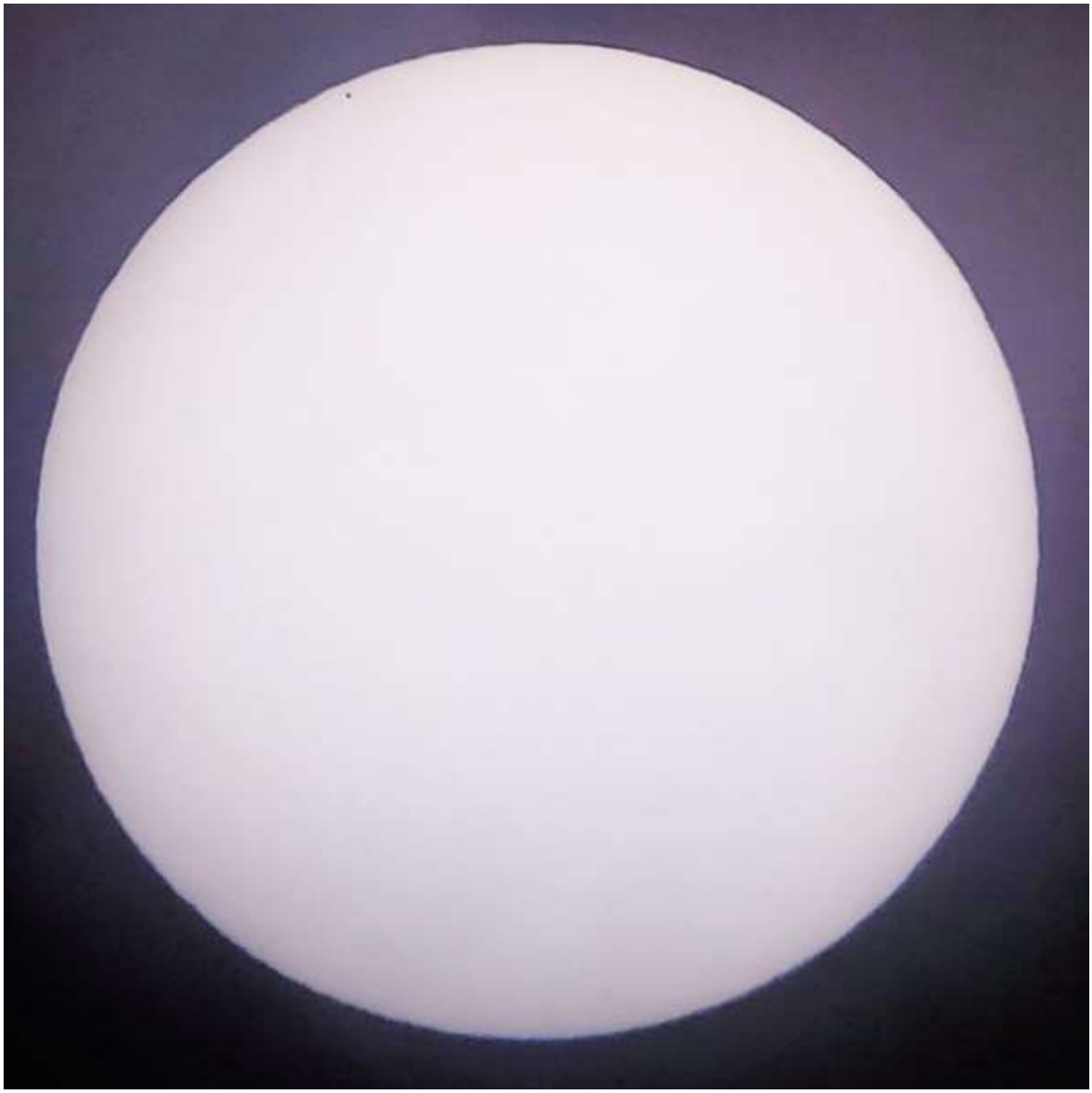
<The first photo was> taken with the standard camera app, and hand-held against a porch railing.

<The second was> taken using NightCap app and mounted on a tripod using the Orion cellphone mount.

Thanks again.

Jon

Mercury Transit Observing Report



Here's a photo I took from the parking lot at my son's school. I was dropping him off for a field trip, and had a few minutes before the bus arrived. This is with the XT8 and a cellphone.

Clear skies,
Scott

(Mercury is at about the 11 o'clock position. –Karl)

Here's another shot of the transit, this time with my "real" digital camera mounted on the XT8. I made a prime focus adapter a couple years ago, and it works for images of brighter objects...

The second image is just a cropped version. These are small Instagram files, you can see the original here: https://flic.kr/p/2hKuWrW

Here's a shot of the camera/adapter: https://flic.kr/p/ESoz8h

And a slightly amusing shot of the tiny camera mounted on the scope, ready to shoot: https://flic.kr/p/EJKn3E

Clear skies,
Scott

If you read the first paragraph of the newsletter you'll know that this is the table and "decorations" of the Cape Fear Astronomical Society at the Cape Fear Fair.

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

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