# CAPE FEAR Skies

*The Monthly Newsletter of the Cape Fear Astronomical Society*

*Volume 5 No. 8* | *Wilmington, NC* | *August 1990*


## August Meeting Announcement

Sunday
August 5, 1990
7:00 PM
Bryan Auditorium
Morton Hall
UNCW Campus

The next meeting of the Cape Fear Astronomical Society will be held on Sunday August 5, 1990 in the Bryan Auditorium of Morton Hall on the UNCW Campus. The Business meeting will begin at 7:00 PM Eastern Time.

The general meeting will begin at 7:30 PM. The program for this months general meeting will be a presentations on the constellations of summer. The program will be presented by society members Martin Best; Ronnie Hawes; and Alan Hilburn.

## Meeting Minutes from July

**Sunday July 1, 1990**

Alan Hilburn called the meeting of the Cape Fear Astronomical Society to order at 7:09pm. He thanked the members who helped with the CFAS display at the mall on June 23 and 24th. We plan to have another one at the Wilmington MarketPlace during October.

Wayne Teachey informed us that we currently have $132.85 in the checking account and $127.17 in the observatory fund.

Tom Jacobs told the membership about the trouble with the Hubble Space Telescope and with the space shuttle's hydrogen gas leak. We were informed that Comet Levy ($1990_c$) might be a naked eye comet. Remember what they said about Comet Austin? We will have to wait and see.

Alan talked about the missing lock at the Hampstead site. We how have a new one. The new combination was attached to the July newsletter. If you did not get the new combination, see one of the officers of the society.

Martin Best and Alan mentioned that a year form now will be "The Big One". No not an earthquake, but the solar eclipse in July 1991. They are planning to go to Mexico to observe it.

After some discussion, we voted to do away with the refreshments since our meetings take place so

**(Continues on page 2)**

## Inside This Issue

# Hubble Telescope Status Update

During the last society general meeting it was reported that NASA had been unable to bring the Hubble Space Telescope into proper focus. After several weeks of trying to adjust the focus, NASA had determined that the optics of the Hubble Space Telescope suffers from spherical aberration.

Light reflected off of a spherical surface is not brought to a single focal point. This is the root cause of spherical aberration. A parabolic surface is required to bring the light to a single focus. A Schmidt telescope uses a correcting lens with a spherical mirror to eliminate the spherical aberration.

The mass media has taken this flaw in the Hubble Space Telescope in combination with the problems NASA has been having with the Shuttle fleet to declare open season on NASA. (I make no comment as to if a NASA "season" is needed at this time.)

The design specification for the Hubble Space Telescope called for 70% of the light from a distance source to form an image 0.1 arc-seconds in radius. Due to the spherical aberration in the Hubble Space Telescope mirror system 70% of the light is concentrated in an image that is 0.7 arc-seconds in radius. The other 30% of the light from the source is found in the diffraction rings around the central image.

There are focal positions where sharp central images of 0.07 arc-seconds are obtainable. However, only about 15% of the light from the source is in the central image at this focus.

This has the greatest effect on the Wide Field/Planetary Camera. Hubble Space Telescope Program Scientist Ed Weiler has stated that no useful science can be done with the Wide Field/Planetary Camera at this time. Science projects that require the Wide Field/Planetary Camera will need to wait for the second-generation instrument. NASA had scheduled a shuttle mission to replace the Wide Field/Planetary Camera for June of 1993. This shuttle mission was scheduled before the defect with the mirror system on the Hubble Space Telescope was detected.

It is time to look beyond the defect and the disappointment in the Hubble Space Telescope and determine what this telescope is capable of doing. This is something that the mass media has failed to do.

Even though the Hubble Space Telescope is not going to be able of working at the level it's designers had planned; the telescope still contains unique capabilities for astronomical observation.

It will still be possible to obtain sharp high-resolution pictures from the Hubble Space Telescope. The object being photograph will need to be bright, high-contrast objects such as stars and galactic nuclei.

In addition to the imaging instruments the Hubble Space Telescope carried several different spectrographic instruments into orbit. These spectrograph instruments will be less effected by the defect in the mirror system. Also, all of the instruments on the Hubble Space Telescope, except for the fine guidance sensors, are sensitive to the ultraviolet wavelengths (from 100 to 400 nanometers). The atmospheres high opacity to ultraviolet light makes the Hubble Space Telescope capabilities superior to any ground based facility.

For the above reason the Hubble Space Telescope will be capable of "real" science 100% of the time.

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**(March Meeting Minutes from page 1)**

shortly after dinner.

We were about to have the main program of the evening by Tom Jacobs, about his trip to Arizona, when all of a sudden THE LIGHTS WENT OUT. Due to a thunderstorm, the power failed about 7:30pm. There we were, sitting in the near dark room. We sat around and talked, watching the storm. The power came back on around 9:00pm, but it was to late to start the program. We will reschedule Tom for some future meeting.

There were 15 members and 1 guest present.

- Ronnie Hawes

# Sky Calendar for August 1990

(All times are given in Eastern Time. Times preceded with the "±" symbol are ±30 minutes of the time listed.)

*Wednesday; Aug 1*
- 4:45 Astronomical twilight begins.
- ±5:00 Antares passes 0.1° south of the Moon Occultation.
- 6:21 Sunrise.
- 20:12 Sunset.
- 21:47 Astronomical twilight ends.

*Thursday; Aug 2*
- 4:46 Astronomical twilight begins.
- 6:22 Sunrise.
- 20:11 Sunset.
- 21:46 Astronomical twilight ends.
- —— Alpha Capricornids Meteors. Radiant is right ascension 20:36; declination -10°; ZHR = 6 to 9; Slow 25 km/sec; yellow in color and bright with many fireballs.

*Friday; Aug 3*
- 4:47 Astronomical twilight begins.
- 6:23 Sunrise.
- ±10:00 Uranus passes 2° north of the Moon.
- 20:10 Sunset.
- 21:45 Astronomical twilight ends.
- ±22:00 Neptune passes 3° north of the Moon.

*Saturday; Aug 4*
- 4:48 Astronomical twilight begins.
- 6:23 Sunrise.
- ±14:00 Saturn passes 1.6° north of the Moon.
- 20:09 Sunset.
- 21:44 Astronomical twilight ends.

*Sunday; Aug 5*
- 4:49 Astronomical twilight begins.
- 6:24 Sunrise.
- 20:08 Sunset.
- 21:42 Astronomical twilight ends.

*Monday; Aug 6*
- 4:50 Astronomical twilight begins.
- 6:25 Sunrise.
- 10:19 Full Moon called the "green corn" or "grain" Moon.
- 10:42 Partial Eclipse of the Moon. Not visible from the Wilmington area.
- 20:07 Sunset.
- 21:41 Astronomical twilight ends.

*Tuesday; Aug 7*
- 4:51 Astronomical twilight begins.
- 6:25 Sunrise.
- 20:06 Sunset.
- 21:40 Astronomical twilight ends.
- —— Iota Aquarids Meteors has three streams. The first has a radiant of right ascension 22:00; declination -6°. Second has a radiant of right ascension 22:30; declination -15°. Third has a radiant of right ascension 22:40; declination -30°; ZHR = 5.

*Wednesday; Aug 8*
- 4:52 Astronomical twilight begins.
- 6:26 Sunrise.
- 20:05 Sunset.
- 21:39 Astronomical twilight ends.
- —— Upsilon Pegasids Meteors. Radiant is right ascension 23:20; declination 19°; ZHR = 4 to 13; Medium speed 50 km/sec; yellow-white in color.

*Thursday; Aug 9*
- ±1:00 Venus passes 7° south of Pollux.
- 4:53 Astronomical twilight begins.
- 6:27 Sunrise.
- 20:04 Sunset.
- 21:37 Astronomical twilight ends.

*Friday; Aug 10*
- 4:54 Astronomical twilight begins.
- 6:28 Sunrise.
- 20:03 Sunset.
- 21:36 Astronomical twilight ends.

*Saturday; Aug 11*
- 4:55 Astronomical twilight begins.
- 6:28 Sunrise.
- ±16:00 Mercury at it's greatest eastern elongation. 27°
- 20:02 Sunset.
- 21:34 Astronomical twilight ends.

*Sunday; Aug 12*
- 4:56 Astronomical twilight begins.
- 6:29 Sunrise.
- ±19:00 Venus passes 0.04° north of Jupiter.
- 20:01 Sunset.
- 21:33 Astronomical twilight ends.
- —— Echo 1 is place in orbit on this date in 1960 becoming the first passive communications satellite.
- —— Perseids Meteors. Radiant is right ascension 3:04; declination 58°; ZHR = 68; Fast 60 km/sec; mostly yellow in color some fireballs.
- —— The first atmospheric flight test of the orbiter Entrerprise occurs on this date in 1977.

*Monday; Aug 13*
- 4:58 Astronomical twilight begins.
- 6:30 Sunrise.
- 11:54 Moon at last quarter.
- ±15:00 Mars passes 7° south of the Moon.
- 20:00 Sunset.
- 21:32 Astronomical twilight ends.

*Tuesday; Aug 14*
- 4:59 Astronomical twilight begins.
- 6:31 Sunrise.
- 19:59 Sunset.
- 21:30 Astronomical twilight ends.

*Wednesday; Aug 15*
- 5:00 Astronomical twilight begins.
- ±6:00 Moon at perigee. Distance from the Earth is 57.9 Earth-radii.
- 6:31 Sunrise.
- 19:58 Sunset.
- 21:29 Astronomical twilight ends.

*Thursday; Aug 16*
- 5:01 Astronomical twilight begins.
- 6:32 Sunrise.
- 19:57 Sunset.
- 21:27 Astronomical twilight ends.

*Friday; Aug 17*
- 5:02 Astronomical twilight begins.
- 6:33 Sunrise.
- 19:56 Sunset.
- 21:26 Astronomical twilight ends.

*Saturday; Aug 18*
- 5:03 Astronomical twilight begins.
- 6:34 Sunrise.
- ±9:00 Jupiter passes 0.4° south of the Moon Occultation.
- 19:55 Sunset.
- ±20:00 Venus passes 0.5° north of the Moon. Occultation.
- 21:24 Astronomical twilight ends.

*Sunday; Aug 19*
- 5:04 Astronomical twilight begins.
- 6:34 Sunrise.
- 19:53 Sunset.
- 21:23 Astronomical twilight ends.

*Monday; Aug 20*
- 5:05 Astronomical twilight begins.
- 6:35 Sunrise.
- 8:39 New Moon. Lunation number 837
- ±12:00 Ceres is in conjunction with the Sun; moves into the morning sky.
- 19:52 Sunset.
- 21:22 Astronomical twilight ends.
- —— Kappa Cygnids Meteors. Radiant is right ascension 19:20; declination 55°; ZHR = 3 to 5; Slow 25 km/sec.

*Tuesday; Aug 21*
- 5:06 Astronomical twilight begins.
- 6:36 Sunrise.
- 19:51 Sunset.
- 21:20 Astronomical twilight ends.

*Wednesday; Aug 22*
- 5:07 Astronomical twilight begins.
- 6:36 Sunrise.
- ±8:00 Mercury passes 0.2° north of the Moon. Occultation.
- 19:50 Sunset.
- 21:19 Astronomical twilight ends.

*Thursday; Aug 23*
- 5:08 Astronomical twilight begins.
- 6:37 Sunrise.
- 19:48 Sunset.
- 21:17 Astronomical twilight ends.

*Friday; Aug 24*
- 5:09 Astronomical twilight begins.
- 6:38 Sunrise.
- 19:47 Sunset.
- ±20:00 Mercury is stationary in right ascension; resumes direct motion.
- 21:16 Astronomical twilight ends.

*Saturday; Aug 25*
- 5:10 Astronomical twilight begins.
- 6:39 Sunrise.
- 19:46 Sunset.
- 21:14 Astronomical twilight ends.

*Sunday; Aug 26*
- 5:11 Astronomical twilight begins.
- 6:39 Sunrise.
- 19:45 Sunset.
- 21:13 Astronomical twilight ends.

*Monday; Aug 27*
- 5:12 Astronomical twilight begins.
- 6:40 Sunrise.
- 19:43 Sunset.
- 21:11 Astronomical twilight ends.
- ±23:00 Moon at apogee. Distance from the Earth is 63.4 Earth-radii.

*Tuesday; Aug 28*
- 3:34 Moon at first quarter.
- 5:13 Astronomical twilight begins.
- 6:41 Sunrise.
- ±13:00 Antares passes 0.2° south of the Moon Occultation.
- 19:42 Sunset.
- 21:09 Astronomical twilight ends.

*Wednesday; Aug 29*
- 5:14 Astronomical twilight begins.
- 6:41 Sunrise.
- 19:41 Sunset.
- 21:08 Astronomical twilight ends.

*Thursday; Aug 30*
- 5:15 Astronomical twilight begins.
- 6:42 Sunrise.
- ±17:00 Uranus passes 2° north of the Moon.
- 19:39 Sunset.
- 21:06 Astronomical twilight ends.
- —— Mission specialist Guy Bluford becomes the first black American in space.

*Friday; Aug 31*
- ±5:00 Neptune passes 3° north of the Moon.
- 5:15 Astronomical twilight begins.
- 6:43 Sunrise.
- 19:38 Sunset.
- 20:00 Current Julian date is 244 8134.5
- ±20:00 Saturn passes 1.7° north of the Moon.
- 21:05 Astronomical twilight ends.

# Upcoming Events for August 1990

**Monthly Meeting of the Cape Fear Astronomical Society**
**Sunday, August 5, 1990; 7:00 PM - Bryan Auditorium; Morton Hall**

**Group Perseids Meteors Viewing Session & Picnic**
**Saturday August 11, 1990; Dusk until "?" - Hampstead Site**

**Executive Board Meeting**
**Sunday August 12, 1990; Ask Alan Hilburn for location.**

**Public Viewing Session**
**Saturday August 18, 1990; 7:00 PM until "?" - Bald Head Island**

**Deadline for the September issue of *Cape Fear Skies.***
**August 18, 1990**

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