CAPE FEAR Skies

The Monthly Newsletter of the Cape Fear Astronomy Club

Volume 3 No. 8 *Wilmington, NC* *August 1988*

August Meeting Announcement

August 6, 1988
7:00 PM
Bryan Auditorium
Morton Hall
UNC-W Campus

The next meeting of the Cape Fear Astronomy Club will be held on August 6, 1988 in the Bryan Auditorium of Morton Hall on the UNC-W Campus. The Business meeting will begin at 7:00 PM EDT.

The general meeting will begin at 8:00 PM. The program for this months general meeting will be a slide program titled *"Vikings 1 and 2 at Mars"* presented by club member Alan Hilburn. This slide show was produced by The Planetary Society.

July Meeting Minutes

July 10, 1988

The July meeting of the Cape Fear Astronomy Club was called to order by President Alan Hilburn at 7:15pm. Due to Paul Petty illness alan discussed the proposed amendments to the club's constitution. The members voted and approved the amendments as published in last months newsletter.

Jane Fountain call the roll. There were 19 members present for the business meeting. Two additional members arrived for the general meeting.

Ronnie Hawes gave the Treasures report. The yard sale netted $110.16 which was added to the general club treasury. There is $394.76 in the Observatory Fund. Ronnie requested that anyone with candy or candy money should be return as soon as possible.

Alan thanked those people who hand helped at the yard sale. This include Kevin Dunay;Rose Dunay; Ronnie Hawes and Charles Peters. Alan also thanks those people who had donated items to be sold. Rose suggested we display our club logo at these events in the future. Kevin shared that some of the worst items sold first.

Barbara McGowan reminded members they can checkout club library books.

Alan stated he hopes everyone with a telescope will bring it to the Mars opposition viewing session. We plan a media blitz for this event. The session will be held on the 17th-18th or 25th-26th of September in the field behind Trask School. (The ballfield) Further plans for the Mars viewing will be made at the August meeting.

The club plans to have a booth at the New Hano-

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ver county fair in October. Candy and perhaps other things will be sold. The club will have to pay a $150. fee for this booth.

Viewing of the upcoming Perseids meteor shower was covered. This shower will appear in the northeastern sky about 3am on August the 12th.

Alan; Martin Best; and Jane Fountain discussed the effects of the intensity and increase in sunspots.

Mike Newton brought his four inch Unitron refractor telescope to display at the meeting.

The general meeting began at 8:15 with an impressive slide presentation by club member Sam Bissette.

Barbara McGowan

Telescope Information Sheets

Since the only telescope I have is the one given to me for Christmas when I was 10 or 12 years old, I don't generally bring it to the club's public viewing sessions. Sometimes when I do bring my telescope I don't bother to set it up.

This has left me free to cover the front table with the donation box or to float around and give the people at the telescopes a break. If we get the large crowds at the public viewing session for this years Mars opposition we will need extra club members to help handle the public.

As an aid for the club member working at a someone else's telescope during our public viewing sessions I hope to create a reference sheets for each telescope that we will be using. This *"cheat"* sheet will provided the answers to the questions most often asked by the public.

The figure at the right is a sample that I have made up using Ronnie Hawes reflector as a model. The figure reproduced here in *Cape Fear Skies* has been reduced to save space. The actual sheet is the size of a regular piece of paper ($8^1/_2$ x 11). The paper page will be placed in a plastic page protector to allow for greater handling of the page; and to guard against a heavy dew.

What I need to know to make one of these reference sheets is: the Aperture; the Focal Distance or Focal Ratio for you telescope. The type of telescope

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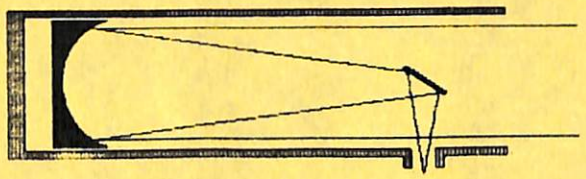
Newtonian Reflector
on a
Dobsonian Mount



Parabolic Mirror — Plane Mirror

Manufactured by: Coulter Optical, Inc
Idyllwild, CA
$239.50

Property of: Ronnie Hawes

	In Inches	In mm
Aperture	8	203.2
Focal Distance	36	915.0
Focal Ratio	4.5	

Eyepiece in mm	Magnification	Magnification w/2.5x Barlow
27	33.9	84.7
21	43.6	108.9
16.3	56.1	140.3
13	70.4	176.0
7.4	123.6	309.1
6	152.5	381.3
4	228.8	571.9

Sky Watch

for the Upsilon Pegasid Meteor Shower

Harold Povemnire is organising a photographic patrol of this shower, which he discovered. With the cooperation of amateur astronomers. He has gathered data about this minor shower for 14 years. His doctoral thesis deals with comet/meteor evolution. The required equipment is very simple - a 35mm camera with a 50mm lens, and a tripod. The patrol procedure is also simple - consecutive 5 minute exposures centered on the Square of Pegasus. (Some cameras can be fitted with a data recorder back, an auto winder, and an intervalomenter. Observations can be made unattended, or while the observer is doing other things.) The time interval of peak interest extends from July 22ed through Augest 19th. For Further information, send a SASE to:

Hal Provenmire
215 Osage Dr.
Indian Harbour Beach, FL 32937.

(Editor's Note: This item has been reprinted from The Shallow Sky Bulletin issue 9 which is published by S. M. Smith of Cleveland Ohio.)

Mars Watch '88:

A fact Sheet and Guide for observers in the Northern Hemisphere

Mars has intrigued humanity for millenia. Seen from Earth, the planet appears distinctively red, a color long associated with battle, inspiring the Romans to call Mars after their god of war. In more recent centuries, the advent of the telescope enabled observers to detect seemingly Earth-like surface features, giving rise to speculation about life on Mars, perhaps an entire civilization. Even as the Mariner and Viking missions dispelled the possibility of ancient cities and canals, Mars emerged as a fascinating planet of towering volcanoes, vast canyons, drifting sand dunes, enigmatic channels and pink skies. And 1988 will find it closer to Earth than it has been in 17 years.

Favorable Oppositions

Mars is closest to Earth when it is both in opposition (the opposite side of Earth from the Sun) and near perihelion (closest to the Sun in its orbit). At it closest approach, Mars comes within 56 million kilometers of Earth (35 million miles) and, at its farthest, can be nearly 400 million kilometers (249 million miles) away.

Oppositions actually occur every 2.14 years, but since Mars' orbit is more elliptical than Earth's, the distances between the two planets at different oppositions vary. Favorable (or perihelic) oppositions, when Mars and Earth are closest, occur every 15 or 17 years. On September 22, 1988, Mars will be 58.6 million kilometers from Earth, its closes approach until the year 2003 and one of the best oppositions of the 20th century. Actual oppositions occurs on September 28, 1988.

Not only will Mars be closer to Earth (and, thus, larger in apparent diameter), it will also be brighter than usual. Like the Moon, the brightness of Mars depends on reflected sunlight. Since Mars will be at perihelion, its closest point to the Sun, it will receive and reflect more light than usual.

Seasons on Mars

Like Earth, Mars has four distinct seasons, and since there are 687 Earth days in a martian year, they last about twice as long as our own planet's. (A martian day is about 41 minutes longer than one on Earth.) When favorable oppositions of Mars occur, it is summer in Earth's northern Hemisphere but late autumn in the northern hemisphere of Mars. However, since Mars' north pole is tilted away from the Sun (and Earth), observers will have a good view of Mars' southern hemisphere during martian summer.

Summer in the southern hemisphere occurs when Mars is at perihelion, so it receives about 44 percent more radiation than at aphelion, the farthest point in its orbit around the Sun. Consequently, southern summers are hotter than those of the northern hemisphere, resulting in such phenomena as global dust storms and a disappearing polar cap.

Temperatures on Mars vary greatly, from -124° F to +63° F, and since the atmosphere is so thin—less that one hundredth of that on Earth—it has almost no heat capacity. This causes temperatures to rise and fall swiftly, resulting in tidal winds which kick up dust into the atmosphere and cause Mars' famous pink skies. The more dust-laden the air becomes, the more heat it can retain, and that meat will generate yet stronger winds. This cycle is a major cause of the giant dust storms which originate in the southern hemisphere and can blanket the entire planet for weeks during the martian summer.

Seasonal fluctuations in the polar caps also contribute to the temperature changes. Ice caps cover both the north and south poles of Mars. While the residual cap (the portion that remains despite seasonal changes) of the north pole is primarily water ice with some frozen carbon dioxide (CO_2), the southern polar is primarily frozen CO_2, the compound which comprises 95.3% of the martian atmosphere. The difference in composition may be due to dust storms carrying water vapor into the northern hemisphere. As the polar caps seasonally recede and grow, ice sublimating into vapor adds CO_2 to the atmosphere while freezing removes it, thus altering the atmospheric pressure and its ability to retain heat.

Surface Features

Although Mars is but half the size of Earth, its land mass is roughly equal since Mars has no oceans; it has no surface water at all except for the water ice of the north polar cap. Martian atmospheric pressure is too low for liquid water to exist on the planet's surface. At such low pressures the boiling point for water is close to the freezing point. Therefore, as soon as ice becomes warm enough to melt, it quickly sublimates into vapor. Evidence indicates, however, that Mars probably had a significantly different atmosphere in past eons, one which allowed water to flow freely on the surface, carving out stream beds and river courses. Such ancient waterways would explain the dry, enigmatic channels winding through the martian plains and valleys.

Geologically diverse, surface features of Mars range from the heavily cratered southern hemisphere to the Tarsis Bulge of the north, from deep chasms to immense volcanoes which soar above the clouds and dust storms.

The Tarsis Bulge, the primary volcanic region on Mars, contains the largest known volcanoes in the

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solar system. Olympus Mons (Mount Olympus) is the largest of them all. Towering 25 Kilometers above the surrounding plain, it would dwarf Earth's Mt. Everest which rises just 9 kilometers above sea level.

Valles Marineris (Valleys of the Mariner) was named after the *Mariner 9* spacecraft which brought the canyons to light through it images in 1971. Stretching over 4,000 kilometers along the martian equator, this series of canyons can be more that 80 kilometers wide and 7 kilometers deep. Valles Marineris probably formed along fault lines in the planet's crust.

Satellites

Mars has two moons, Phobos (Fear) and Deimos (Dread), first discovered in 1877 by Asaph Hall who named them after the sons of the god of war. Both are small moons, much smaller than Earth's Moon and many of the known satellites of the other planets in the solar system. Phobos and Deimos are very irregular in shape and are heavily cratered and cracked by meteorite impacts. The Soviet Union's *Phobos* mission, scheduled to launch in July 1988, will send two spacecraft to orbit Mars and hover over the surface of Phobos. Each spacecraft will carry two landing craft for the martian moon, a Long-Term Automated Lander to carry out experiments on Phobos and a Hopper which will literally "hop" about the moon exploring the surface.

Exploration

Beginning with *Mariner 4*, which flew by Mars on July 15, 1965, and culminating with *Vikings 1 and 2* sending landers to the planet's surface in 1976, twelve spacecraft from the United States and the Soviet Union have visited Mars. NOw, both countries are resuming martian exploration with such missions as the *Phobos* spacecraft from the USSR launching this year and NASA's Mars Observer mission scheduled to launch in 1992. Both nations are also seriously considering sending humans to Mars in the first decades of the 21st century.

Observation

Since Mars will be closest to Earth on September 22 this year, the best viewing period will be during the weeks directly preceding and following that date. Rising at sunset, the planet will be easily visible all night long, a brilliant crimson spark in the evening sky.

To locate Mars, use the Big Dipper and the North Star (Polaris) as reference points. The Big Dipper will be low in the northern sky in September. In the Big Dipper locate the two stars that make up the side of the bowl opposite of the handle (the Pointers). Imagine a straight line five times as long as the distance between these two stars leading down out of the bowl of the Big Dipper. You will hit a fairly dim, isolated star. This star is Polaris, the North Star.

Extend the line further, about twice as far as the separation between the Pointers and Polaris. This brings you to the Great Square and follow that side the distance of 1.5 of its lengths as your eye moves further away from Polaris. There you will find a lonely, bright orangish pinpoint of light: the planet Mars.

For careful observers, a four-inch diameter telescope will show surface detail and atmospheric clouds on Mars for about 2.5 months on either side of opposition. Six to ten inch telescopes extend the viewing period to 6 months on either side of opposition, and larger telescopes lengthen the period further yet.

(Editor's Note: This article on observing Mars was provided by the Planetary Society, Pasadena, California)

Changes to The Sky Calendar

Some changes have been made to the Sky Calendar that appears each month in Cape Fear Skies. In past issues of Cape Fear Skies some of the events had been listed like this:

12:00 Ceres is stationary in right ascension.

This is somewhat misleading because the time of the event has only been calculated to the nearest hour. In this and all future issues of Cape Fear Skies events like this one will be listed as follows:

12h Ceres is stationary in right ascension.

When you see an event listed in the sky calendar in this format you must remember that the event will occure sometime during the period plus or minus 30 minutes from the listed time. For example the event, " Ceres is stationary in right ascension" can occure anytime between 11:30:00 and 12:29:59.

I hope that this has not caused any problems for observers in the past.

- Tom Jacobs

(Telescope Information - From page 2)

and manufacturer of the scope. As well as the type of mount the telescope uses. Finally a list of eyepieces that you use with your telescope.

I will have the full size sample at the next meeting if anyone wishes to see it. If you would like to have a sheet like this made up for your telescope all you need do is to get the above information to me.

- Tom Jacobs

Sky Calendar for August 1988

(All times are Given in UT to convert to EDT subtract 4 hours.)

1st
12h Ceres is stationary in right ascension.

2ed
11h Mars passes 8° south of the Moon.
16h Pallas at opposition.
------ 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.

3rd
4h Mercury in superior conjunction moves into the evening sky.

4th
18:22 Moon at last quarter.
11h Mercury at it's greatest northern latitude 7°.

5th
7h Venus at it's greatest southern latitude -3.4°.

6th
8h Jupiter passes 6° south of the Moon.

7th
------ 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.

8th
12h Venus passes 9° south of the Moon.
------ Upsilon Pegasids Meteors. Radiant is right ascension 23:20; declination 19°; ZHR = 4 to 13; Medium speed 50 km/sec; yellow-white in color.

10th
4h The Sun enters the constellation of Leo.

12th
12:31 New Moon. Lunation number 812
13h Mars at perihelion distance is 1.38 a.u. from the Sun.
------ Perseids Meteors. Radiant is right ascension 3:04; declination 58°; ZHR = 68; Fast 60 km/sec; mostly yellow in color some fireballs.

------ Echo 1 is place in orbit on this date in 1960 becoming the first passive communications satellite.
------ The first atmospheric flight test of the orbiter Enterprise occurs on this date in 1977.

14th
12h Moon at apogee distance is 63.7 Earth-radii.
13h Moon at descending node.

20th
15:51 Moon at first quarter.
------ Kappa Cygnids Meteors. Radiant is right ascension 19:20; declination 55°; ZHR = 3 to 5; Slow 25 km/sec.

21st
14h Antares passes 0.7° north of the Moon.

22ed
12h Venus at it's greatest western Elongation of 46°.
19h Saturn passes 6° north of the Moon.
21h Uranus passes 5° north of the Moon.

23rd
14h Neptune passes 6° north of the Moon.

26th
23h Mars is stationary in right ascension begins retrograde (westward) motion.

27th
10:56 Full Moon called the Green Corn or Grain Moon.
17h Moon at perigee distance is 56.0 Earth-radii.
21h Mercury at descending node.

28th
2h Moon at ascending node.

30th
3h Mars passes 9° south of the Moon.
11h Saturn is stationary in right ascension resumes forward (eastward) motion.
------ Mission specialist Guy Bluford becomes the first black American in space.

Upcoming Events for August

Monthly Meeting of the Cape Fear Astronomy Club
August 6, 1988; 7:00 PM - Bryan Auditorium; Morton Hall; UNC-W

Club Viewing Session
August 13, 1988; Dusk until "?" – Pender County Site

Club and/or Public Viewing Session
August 20, 1988; Dusk until "?" – Site to be Announced

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FAYETTEVILLE, NC 283
PM
JUL 27
1988

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