# SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England

AUG 2010

Member of NASA's Night Sky Network

Astronomical League Member

**ASNNE MISSION**

**ASNNE is an incorporated, non-profit, scientific and educational organization with three primary goals:**

***1) To have fun sharing our knowledge and interest with others.***

***2) To provide basic education in astronomy and related sciences to all who are interested.***

***3) To promote the science of Astronomy.***

**NOTICE: NEW MEETING LOCATION AT "THE NEW SCHOOL IN KENNEBUNCK." SEE PAGE 7 FOR DIRECTIONS.**

## What's Up In August

*By Bernie Reim*

This month opens with a trio of neighboring planets playing tag in our western evening sky shortly after sunset. We are in the middle of summer now, and the nights are getting longer again so we can enjoy more of its wonders.

The night sky always has much to offer, but many of us simply don't take the time to appreciate our connections to the universe and how that can greatly improve the quality of our daily lives as we put that knowledge and imagination into practice.

Two meteor showers will grace our skies this month, including the famous Perseids. A short period comet should also get bright enough to be seen with a pair of binoculars by the middle of August.

Look low in the western sky shortly after sunset, and you will see that Mars has already passed Saturn. Venus will also glide below Saturn about a week later. These three planets will put on a display of beautiful celestial geometry all month long. On August 10, the three will form a near isosceles triangle, with two of the sides nearly equal, with brilliant Venus anchoring the bottom, orange Mars to the upper left, and golden Saturn to the upper right. This triangle will fit into a 7 degree-diameter circle. Then continue watching this ever-changing geometry lesson as a slender waxing crescent moon joins the trio on the evening of Thursday, August 12, the night that the Perseid Meteor Shower will peak.

There will even be an earlier meteor shower this month, the Northern Delta Aquarids, peaking on Sunday night the 8th. The comet that created these meteors has long since taken on a different orbit or crashed, unlike Comet Swift-Tuttle, which causes the Perseids each year. Although its numbers will not be nearly as prolific as the famous Perseids, the Northern Delta Aquarids originate from a very interesting place in our night sky.

The radiant of this meteor shower will be just above the first magnitude star named Fomalhaut in Piscis Austrinus, the Southern Fish. This star became famous in November of 2008 when the first planet to be seen directly with visible light as imaged by the Hubble Space Telescope, was found orbiting Fomalhaut. Named Fomalhaut B, this planet is located 10 billion miles from its parent star, which is 10 times the distance to Saturn, takes 875 years for one orbit and is no more than 3 times the mass of Jupiter. If it were any more massive, it would have destroyed the vast dust belt that surrounds Fomalhaut. About 20 billion miles in diameter, this great dust ring is 2 billion miles wide, or about 25 times the earth-sun distance. This shows how tremendously balanced and delicate this giant dust ring really is.

It was suspected for 8 years that a planet might be orbiting Fomalhaut because of this

***"Continued on page 2"***

## *Inside This Issue*

## Club Contacts

**Officers:**

President:
Ron Burk
rdavidburk@yahoo.com

Vice President:
Joan Chamberlin
starladyjoan@yahoo.com

Secretary:
Alan Goff
alangoff@computer.org

Treasurer:
TBD
See Ron Burk for now

**Board of Directors:**

Albert Heinrich
aheinrich42001@yahoo.com.au

David Bianchi
dbianchi@verizon.net

Adam Amara
amara.adam@juno.com

**Star Party Co-ordinator:**

TBD

**Skylights Editor:**

Paul Kursewicz
pkursewicz@myfairpoint.net

**Website Manager:**

Jim Hatch
nerdfulthings@earthlink.net

**NASA Night Sky Network Co-ordinator:**

Joan Chamberlin
starladyjoan@yahoo.com

**JPL Solar System Ambassador:**
Joan Chamberlin
starladyjoan@yahoo.com

**What's Up "*Continued from page 1*"**

dust ring, but it wasn't proven until November of 2008. At that time, only about 300 other planets had been found in other solar systems, but this was the first one seen directly without having to infer its presence through other means of detection. Now we know of nearly 500 exoplanets already.

Fomalhaut is twice the mass and diameter of our sun and located only 25 light years away. It is a very young star, only about 200 million years old. That is less than one twentieth the age of our earth and our sun. That is about the time the first dinosaurs appeared and the last supercontinent, Pangaea, started breaking up. Fish have existed in our oceans for more than twice that time. Its name means the mouth of the fish or whale in Arabic.

The famous Perseids will be favorable this year, because there will be no moon to interfere with this tremendous, yet totally silent, celestial fireworks display. You can expect up to 100 meteors per hour from a dark sky sight before dawn on the morning of Friday the 13th. You can expect about half that many the night before and after that date. Look low in the northeastern sky in Perseus the Hero to catch the radiant of these prolific meteors. Caused by Comet Swift-Tuttle, these tiny, sand grain-sized pieces of comet dust will be crashing into our upper atmosphere at nearly 40 miles per second, leaving brilliant streaks of light.

There will be a short period comet, named 10P/Tempel that should be visible by the middle of August with binoculars or a small telescope. It orbits the sun every 5.4 years, looping from just inside the path of Mars out to Jupiter's path. By comparison, Halley's Comet takes 76 years to make one orbit and is not due back until 2062, although you can see tiny pieces of this famous comet burn up in our atmosphere as meteors twice each year, on May 4th as the Eta Aquarids, and on October 21 as the Orionids.

Comet 10P/Tuttle should reach 8th magnitude or brighter and be visible by 1 am in the constellation of Cetus the Whale in the southeastern sky. This comet reached perihelion, or its closest approach to the sun back on July 4. Try to catch this ancient relic from our solar system's original formation this month, because you will have to wait 3 more orbits, until 2026, for its next favorable apparition.

The other 2 gas giants, Uranus and Neptune, are also interesting to see this month, but you will need binoculars or a telescope to really appreciate these last two planets, representing one quarter of all the planets in our "new" reduced solar system. Uranus should be easy to find, because it will be just 2 degrees to the right of brilliant Jupiter in Pisces, now rising before 10 pm. However, Uranus will be nearly 9 magnitudes, or about 3000 times fainter than Jupiter. Our 7th planet was discovered back on March 13 of 1781 by William Herschel. It was actually first discovered by John Flamsteed back in 1690, but he thought it was just a star in Taurus, so he did not get any credit. If he would have kept watching it from night and night, he would have noticed that it moved a little, so that would preclude it from being a star.

Neptune, mathematically predicted to exist in 1845 by John Couch Adams in Cambridge and LeVerrier in Paris, but first observed by the German astronomer Johann Galle on Sept. 23, 1846 will have finally completed one orbit around the sun since that time. Neptune is the only planet in our solar system that was first shown that it had to exist mathematically and then it was actually found to exist, providing dramatic proof of Newton's laws. Neptune was actually first seen by several other astronomers including Galileo himself back in 1612 and 1613, but again it was mistaken for just a star. The beautiful blue disk of Neptune is now in almost the same place in the sky when it was first discovered 165 years ago.

August 3. Last quarter moon is at 12:59 a.m. EDT. The Messenger spacecraft was launched to Mercury on this day in 2004.
August 5. Neil Armstrong, the first human to set foot on the moon, was born on this day in 1930, the same year that Clyde Tombaugh discovered Pluto.
August 9. Venus passes 3 degrees south of Saturn tonight. New moon is at 11:08 pm.
August 11. Asaph Hall discovered Deimos, one of the two tiny moons of Mars on this day in 1877. He discovered Phobos, the other moon of Mars on August 17, 1877.
August 12. The Perseid meteor shower peaks.
August 13. The moon passes just south of Saturn, Venus, and Mars tonight.
August 16. First quarter moon is at 2:14 p.m.
August 22. On this day in 1963, the X-15 set the world altitude record for a winged craft at 354,000 feet or 67 miles high above the earth.
August 24. Full moon is at 1:05 p.m. This is also called the Sturgeon, Grain or Green Corn Moon.

## Moon Phases

**Aug 3**
Last Quarter

**Aug 9**
New

**Aug 16**
First Quarter

**Aug 24**
Full

## Moon Data

**Aug 11**
Mercury 2° north of Moon

**Aug 10**
Moon at perigee

**Aug 13**
Venus 5° north of Moon

Mars 6° north of Moon

Saturn 8° north of Moon

**Aug 24**
Neptune 5° south of Moon

**Aug 25**
Moon at apogee

**Aug 27**
Uranus 6° south of Moon

Jupiter 7° south of Moon

# Sky Object of the Month – August 2010
# IC 4665
# by Glenn Chaple

During the summer of 1977, I was thumbing through the pages of the July issue of *Astronomy*. I came across a photograph of the constellation Ophiuchus and noticed what appeared to be a nice open star cluster a degree or two north of beta (β) Ophiuchi. A check of *Norton's Star Atlas* showed just a single star in that location. Intrigued, I decided to go outside and look for myself. Lo and behold, my 8X50 binoculars revealed a beautiful open cluster about a degree across and containing some two dozen stars. To me, it resembled the Praesepe Cluster in Cancer.

I sent a description of the mystery cluster to "Deep Sky Wonders" columnist Walter Scott Houston. He wrote back, informing me that my "discovery" was, in fact the open star cluster IC 4665. It wasn't plotted on my copy of *Norton's*, an omission rectified in more recent editions.

One reason for IC 4665's relative anonymity is its large size, allowing it to elude the narrow fields of large-aperture telescopes. Charles Messier and William Herschel missed it, and it wasn't included in the New General Catalogue. This often-overlooked cluster is definitely a must-see object for binoculars and rich-field telescopes.

Your comments on this column are welcome. E-mail me at gchaple@hotmail.com

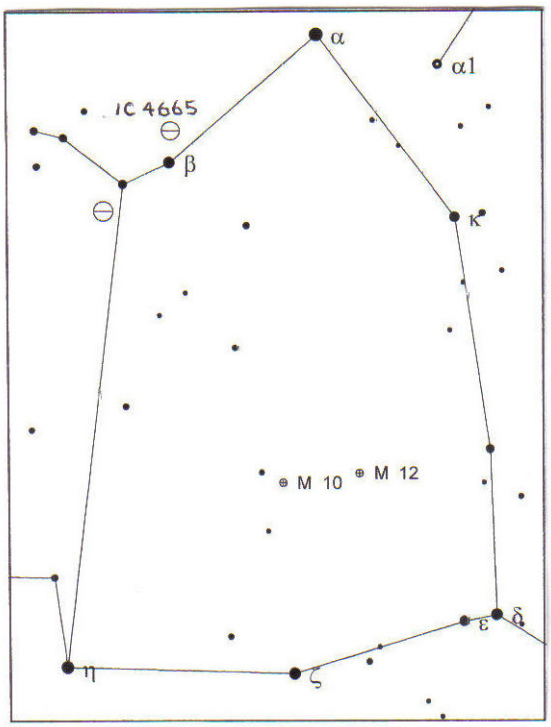



Chart for IC 4665
From Cartes du Ciel

## Principal Meteor Showers in 2010

**January 4**
Quadrantids

**April 22**
Lyrids

**May 6**
Eta Aquarids

**July 30**
Delta Aquarids

**August 12**
Perseids

**October 9**
Draconid

**October 21**
Orionids

**November 9**
Taurids

**November 18**
Leonids

**November 26**
Andromedids

**December 14**
Geminids

**December 22**
Ursids

*Note: Dates are for maximum*

Most of us know that Summer Solstice has the most daylight hours and Winter Solstice the fewest. The Vernal and Autumnal Equinoxes have equal amounts of daylight and dark. But do we know why? And what do these dates have to do with the equator and the Tropics of Cancer and Capricorn? Find and understand the answers once and for all on SciJinks, http://scijinks.gov/solstice.

Best wishes,

The SciJinks Team

NOTE: In addition to The Space Place website, there are two other fun and educational websites for kids? The *SciJinks Weather Laboratory* targets middle-schoolers. It explains the reasons for the seasons, the tides, and other weather and Earth science mysteries in colorful "Now I get it!" pages. *NASA Climate Kids* demystifies the "Big Questions" about global climate change using 4-6th-grade-level language, colorful illustrations, humor, interactivity, and games.

The Space Place website (http://spaceplace.nasa.gov)

The *SciJinks Weather Laboratory* at http://**scijinks.gov**

*NASA Climate Kids* at http://**climate.nasa.gov/kids**

**The latest issue of the Space Place Newsletter: News and Notes for Formal and Informal Educators can be found at: http://spaceplace.nasa.gov/en/educators .**

## Club Items For Sale



**Our club has merchandise for sale at:**
**www.cafepress.com/asnne**
***All money raised goes to our operating fund.***

# The Sun Can Still Remind Us Who's Boss

by Dr. Tony Phillips

Grab your cell phone and take a good long look. It's indispensible, right? It tells time, surfs the web, keeps track of your appointments and, by the way, also makes phone calls. Modern people can hardly live without one.

One good solar flare could knock it all out.

"In the 21st century, we're increasingly dependent on technology," points out Tom Bogdan, director of NOAA's Space Weather Prediction Center in Boulder, Colorado. "This makes solar activity an important part of our daily lives."

Indeed, bad space weather can knock out power systems, telecommunications, financial and emergency services—basically, anything that needs electronics to work. That's why NOAA is building a new fleet of "space weather stations,"the GOES-R satellites.

"GOES-R will bring our existing fleet of weather satellites into the 21st century," says Bogdan. "They're designed to monitor not only Earth weather, but space weather as well."

NOAA's existing fleet of Geostationary Operational Environmental Satellites (GOES) already includes some space weather capabilities: solar ultraviolet and X-ray telescopes, a magnetometer and energetic particle sensors. GOES-R will improve upon these instruments and add important new sensors to the mix.

One of Bogdan's favorites is a particle detector named "MPS-Low," which specializes in sensing low-energy (30 ev – 30 keV) particles from the sun.

Who cares about low-energy particles? It turns out they can be as troublesome as their high-energy counterparts. Protons and other atomic nuclei accelerated to the highest energies by solar flares can penetrate a satellite's exterior surface, causing all kinds of problems when they reach internal electronics. Low-energy particles, particularly electrons, can't penetrate so deeply. Instead, they do their damage on the outside.

As Bogdan explains, "Low-energy particles can build up on the surfaces of spacecraft, creating a mist of charge. As voltages increase, sparks and arcs can zap electronics—or emit radio pulses that can be misinterpreted by onboard computers as a command."

The Galaxy 15 communications satellite stopped working during a solar wind storm in April 2010, and many researchers believe low-energy particles are to blame. GOES-R will be able to monitor this population of particles and alert operators when it's time to shut down sensitive systems.

"This is something new GOES-R will do for us," says Bogdan.

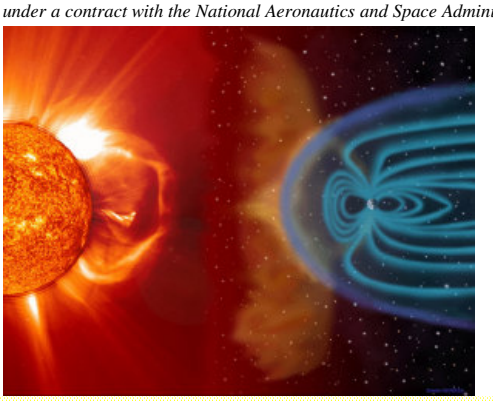
The GOES-R magnetometer is also a step ahead. It will sample our planet's magnetic field four times faster than its predecessors, sensing vibrations that previous GOES satellites might have missed. Among other things, this will help forecasters anticipate the buildup of geomagnetic storms.

And then there are the pictures. GOES–R will beam back striking images of the sun at X-ray and extreme UV wavelengths. These are parts of the electromagnetic spectrum where solar flares and other eruptions make themselves known with bright flashes of high-energy radiation. GOES-R will pinpoint the flashes and identify their sources, allowing forecasters to quickly assess whether or not Earth is in the "line of fire."

They might also be able to answer the question, *Is my cell phone about to stop working?*

The first GOES-R satellite is scheduled for launch in 2015. Check **www.goes-r.gov** for updates. Space weather comes down to Earth in the clear and fun explanation for young people on SciJinks, **http://scijinks.gov/space-weather-and-us** .

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*



**Caption:**
*In spite of Earth's protective magnetosphere, solar storms can wreak havoc with Earth satellites and other expensive electronics on the ground.*

**Editor: Found some images which I thought were interesting.**

Apollo 11 Mission image - Lunar Module and Earth

"NASA/courtesy of nasaimages.org."

The Brightness of the Sun

"NASA/courtesy of nasaimages.org."

Fly Away Home

"NASA/courtesy of nasaimages.org."

Shepard Completes His Mission

"NASA/courtesy of nasaimages.org."

A Day of Remembrance

"NASA/courtesy of nasaimages.org."

Apollo 11 Mission image - Lunar surface and horizon Module

"NASA/courtesy of nasaimages.org."

## Club Meeting & Star Party Dates

| Date | Subject | Location |
|---|---|---|
| August 6 | **ASNNE Club Meeting**<br><br>**6:00 -7:00PM:** Business Meeting<br>**6:30 -7:00PM:** Beginner Astronomy Class (Public walk-ins welcome).<br>**7:00-9:30PM:** Club Meeting:<br>*Bernie Reim's "What's Up."<br>*Astro Shorts & Astro News.<br>*Monthly Pluto Poll<br><br>**Topic:** Constellations Cygnus and Pegasus. Bring your questions, stories, object information, picture charts, observation notes, etc. Everyone can contribute to these two famous constellations. | The New School, Kennebunck, Me. |
| August 13 | Club/Public Star Party. Rain date August 14. (*Visit website for updates and or cancellations*). | Starfield Observatory, West Kennebunk, Me. |
| Postponed | James Standerfer PhD.- Physicist and new ASNNE member will give a talk on General Relativity. | |
| August 6 | Constellation of month – Cygnus and Pegasus. | |
| Sept 11-12 | Starfest - Short member presentation by, Brad Irish, Ron Burk and others. | |
| Oct 1 | Steve Innes - Will share his 2009 China Eclipse experience with us. | |
| | (Meetings are scheduled for 11/5 and 12/3 – programs to be determined). | |

## Directions to ASNNE event locations

**Directions to The New School in Kennebunck** [38 York Street (Rt1) Kennebunk, ME]

For directions to The New School you can use this link to the ASNNE NSN page and then click on "get directions" from the meeting location. Enter your starting location to generate a road map with complete directions. It works great.
http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137

**Directions to Starfield Observatory**

**From North:**
Get off turnpike at exit 32, (Biddeford) turn right on Rt 111. Go 5 miles and turn left on Rt 35. Go 2 miles on Rt 35 over Kennebunk River to very sharp 90 degree left turn. The entrance to the Starfield Observatory site is at the telephone pole at the beginning of the large field on the left. Look for the ASNNE sign on the pole.

**From South:**
Get off the turnpike at exit 25 in Kennebunk. After toll both turn right on Rt 35. Go up over the turnpike and immediately turn right on Rt 35. About 4 miles along you will crest a hill and see a large field on your right. Continue until you reach the end of the field. Turn right into the Starfield Observatory site at the last telephone pole along the field. Look for the ASNNE sign on the pole. If you come to a very sharp 90 degree right turn you have just passed the field.

To join **ASNNE**, please fill out the below membership form. *Checks should be made payable to: Astronomical Society of Northern New England (A.S.N.N.E).* For more details, please visit our website: **http://www.asnne.org**

Astronomical Society of Northern New England
P.O. Box 1338
Kennebunk, ME 04043-1338

**2010 Membership Registration Form**

(Print, fill out and mail to address above)

Name(s for family): _____

Address: _____
City/State: _____ Zip code: _____

Telephone # _____

E-mail: _____

Membership (check one):
Individual $35 _____ Family $ 40 _____ Student under 21 years of age $10 _____ Donation_____

Sky & Telescope ($32.95)_____ Astronomy ($34)_____

Total Enclosed_____

Tell us about yourself:
1. Experience level: Beginner____ Some Experience ____ Advanced_____

2. Do you own any equipment? (Y/N) And if so, what types?

_____
3. Do you have any special interests in Astronomy?

_____
4. What do you hope to gain by joining ASNNE?

_____
5. How could ASNNE best help you pursue your interest in Astronomy?

_____
6. ASNNE's principal mission is public education. We hold many star parties for schools and the general public for which we need volunteers for a variety of tasks, from operating telescopes to registering guests to parking cars. Would you be interested in helping?
Yes_____ No_____

7. ASNNE maintains a members-only section of its web site for names, addresses and interests of members as a way for members to contact each other. Your information will not be used for any other purpose. Can we add your information to that portion of our web site?

Yes_____ No_____