



Monthly Notices of the Everglades Astronomical Society



Naples, FL
August 2013

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President's Message

Last month's informal meeting at Blueberries was so much fun, we are going to do it again this coming Tuesday!

This being August, it's time to remind everyone to get ready to sign up for next year's Winter Star Party. Usually packages are mailed out in September and can also be downloaded from the website shortly thereafter.

In case anyone is wondering out there, I am constructing the secondary cage for the 20-inch telescope and have also cut the plywood for the mirror box. I'll bring the secondary cage to the meeting in September assuming I get a spider by then.

Clear Skies,
President
Mike Usher

Dates for the "Fak"

Usually the best times to go out to the Fakahatchee Strand viewing site are moonless nights. Below is a list of upcoming Saturday nights that you will often find fellow club members out there enjoying the skies with you (weather permitting).

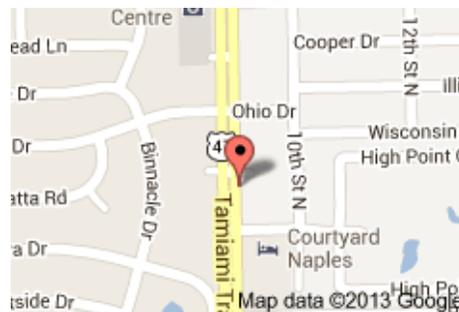
Date	Moonrise	Moonsset
August 31	1:51 a.m.	3:31 p.m.
September 7	8:05 a.m.	7:58 p.m.

Sky Events

- Aug. 6 - New moon
- Aug. 12 - Perseid meteor shower
- Aug. 14 - First quarter
- Aug. 20 - Full moon
- Aug. 27 - Neptune at Opposition (closest approach to Earth)
- Aug. 28 - Last quarter

Next Meeting

August 13, 2013
Time 7:00 – 9:00 pm
At Blueberries, 3350 Tamiami Trail North, Naples



Perseid Meteor Shower By Jackie Richards

What a spectacular show we saw of the Perseid Meteor Shower at the Fak on Saturday and Sunday nights.



Photo by Jackie Richards, Perseid Meteor Shower, 8.12.13, Canon Rebel T2i, ISO 6400, 18 seconds.

The Perseids are a meteor shower associated with the comet Swift-Tuttle and are so called because the point from which they appear to come, called the radiant, lies in the constellation Perseus. The stream of debris is called the Perseid cloud and it stretches along the orbit of this comet. The cloud consists of particles ejected by the comet as it travels on its 130-year orbit. Most of the dust in the cloud today is around a thousand years old.



Photo by Lori Piper. Perseid Meteor Shower, 8.11.13. Canon T3i, ISO 6400, 18 seconds.

The Perseid meteor shower has been observed for about 2,000 years. The shower is visible from mid-July each year, with the peak in activity being between August 9 and 14. As with all meteor showers, the rate of meteors is greatest in the pre-dawn hours, since the side of the Earth nearest to turning into the sun scoops up more meteors as the Earth moves through space. This part of the sky is directly overhead at dawn.

The Perseid meteoroids (what they are called in space) are anywhere from 60 to 100 miles apart and enter the Earth's atmosphere (then called meteors) at about 133,000 mph. Most are the size of sand grains and a few are as big as peas or marbles. Almost none hit the ground, but if they do, they are called meteorites.

When a Perseid particle hits Earth's atmosphere, it compresses the air in front of it, which heats up. The intense heat vaporizes most meteors, creating what we call shooting stars. Most become visible at about 60 miles above us. Some large meteors can break apart causing a bright flash called a fireball, which many club members were lucky enough to have witnessed at last year's Winter Star Party.

In addition to the many club members observing the meteor shower at the Fak, 15 members from the Naples Camera Club (DPI-FIG Group) joined us. It's hard to tell how many meteors there actually were each night, but club members counted meteors during half hour periods both nights and came up with the following numbers which, when doubled, provide us with an hourly average. Lori Piper counted 12

meteors from about 2:15 a.m. to 2:45 a.m. on Sunday morning, August 11th (estimating 24 meteors an hour). Rick Piper counted 22 meteors between 5:10 a.m. and 5:40 a.m. on Sunday morning (estimating 44 meteors an hour). Then on Monday morning, August 12th Rick Piper counted 13 meteors between 1:56 a.m. and 2:26 a.m. (estimating 26 an hour), 25 meteors between 3:10 a.m. and 3:40 a.m. (estimating 50 meteors an hour), and 29 meteors between 4:27 a.m. and 4:57 a.m. (estimating 58 meteors an hour at the peak of this meteor shower).



Photo by Rick Piper. Andromeda Galaxy and M110. Canon XSi, ISO 1600, 2 minutes, 10 seconds.

Club members were taking pictures both nights in an attempt to capture one of the meteors. We pointed our cameras at the night sky, clicked away and hoped for the best. Out of about 700 pictures, two meteors were caught by Lori Piper and me and can be seen in the photos above. Other photos taken at the Fak during the meteor shower include Rick Piper's photo of our neighboring Galaxy, Andromeda (photo above), Lori Piper's picture of lightning from an off-shore thunderstorm (photo below), and Chuck Pavlick's photo of the North American Nebula (left of photo) and the Pelican Nebula (right of photo) which can both be seen in his photo on page 3.



Photo by Lori Piper. Lightning, 8.12.13. Canon T3i.



Photo by Chuck Pavlick, North American Nebula and Pelican Nebula, Canon, 70-200 mm, Hap Griffin Modified Rebel xt, AP mach 1 with PHD autoguiding, 50 mm with starshoot 1 (18 @ 480 seconds).

What a weekend it was!



Inventing Astrophotography: Capturing Light Over Time

By Dr. Ethan Siegel

We know that it's a vast Universe out there, with our Milky Way representing just one drop in a cosmic ocean filled with hundreds of billions of galaxies. Yet if you've ever looked through a telescope with your own eyes, unless that telescope was many feet in diameter, you've probably never seen a galaxy's spiral structure for yourself. In fact, the very closest large galaxy to us—Andromeda, M31—wasn't discovered to be a spiral until 1888, despite being clearly visible to the naked eye! This crucial discovery wasn't made at one of the world's great observatories, with a world-class telescope, or even by a professional astronomer; it was made by a humble amateur to whom we all owe a great scientific debt.

Beginning in 1845, with the unveiling of Lord Rosse's 6-foot (1.8 m) aperture telescope, several of the nebulae catalogued by Messier, Herschel and others were discovered to contain an internal spiral structure. The extreme light-gathering power afforded by this new telescope allowed us, for the first time, to see these hitherto undiscovered cosmic constructions. But there was another possible path to such a discovery: rather than collecting vast amounts of light through a giant aperture, you could collect it *over time*, through the newly developed technology of photography. During the latter half of the 19th Century, the application of photography to astronomy allowed

us to better understand the Sun's corona, the spectra of stars, and to discover stellar and nebulous features too faint to be seen with the human eye.

Working initially with a 7-inch refractor that was later upgraded to a 20-inch reflector, amateur astronomer Isaac Roberts pioneered a number of astrophotography techniques in the early 1880s, including "piggybacking," where his camera/lens system was attached to a larger, equatorially-mounted guide scope, allowing for longer exposure times than ever before. By mounting photographic plates directly at the reflector's prime focus, he was able to completely avoid the light-loss inherent with secondary mirrors. His first photographs were displayed in 1886, showing vast extensions to the known reaches of nebulosity in the Pleiades star cluster and the Orion Nebula.

But his greatest achievement was this 1888 photograph of the Great Nebula in Andromeda, which we now know to be the first-ever photograph of another galaxy, and the first spiral ever discovered that was oriented closer to edge-on (as opposed to face-on) with respect to us. Over a century later, Andromeda looks practically identical, a testament to the tremendous scales involved when considering galaxies. If you can photograph it, you'll see for yourself!

Astrophotography has come a long way, as apparent in the Space Place collection of NASA stars and galaxies posters at <http://spaceplace.nasa.gov/posters/#stars>.



Great Nebula in Andromeda, the first-ever photograph of another galaxy. Image credit: Isaac Roberts, taken December 29, 1888, published in *A Selection of Photographs of Stars, Star-clusters and Nebulae*, Volume II, The Universal Press, London, 1899.

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Items For Sale or Trade or Wanted:

http://www.naples.net/clubs/eas/equipment_sales.html

Useful links (software, telescope making, telescope and equipment suppliers, astronomical data sources, iPhone and iPad Apps and more):

<http://www.naples.net/clubs/eas/links.html>

EAS 2013 DUES

For the bargain price of only \$20.00 per family, all this can be yours this year:

- Meet with your fellow astronomy enthusiasts at least 10 times a year;
- Learn about astronomy and telescopes. Check out our club scope;
- Many opportunities to view planets, nebulae and other celestial objects (even if you don't have your own telescope); and
- Enjoy the many astronomy programs at our regular monthly meetings.

Don't miss out! Fill out this form (please print clearly) and send it with your \$20 check to the Everglades Astronomical Society, P. O. Box 1868, Marco Island, Florida, 34146.

Name:

Address:

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