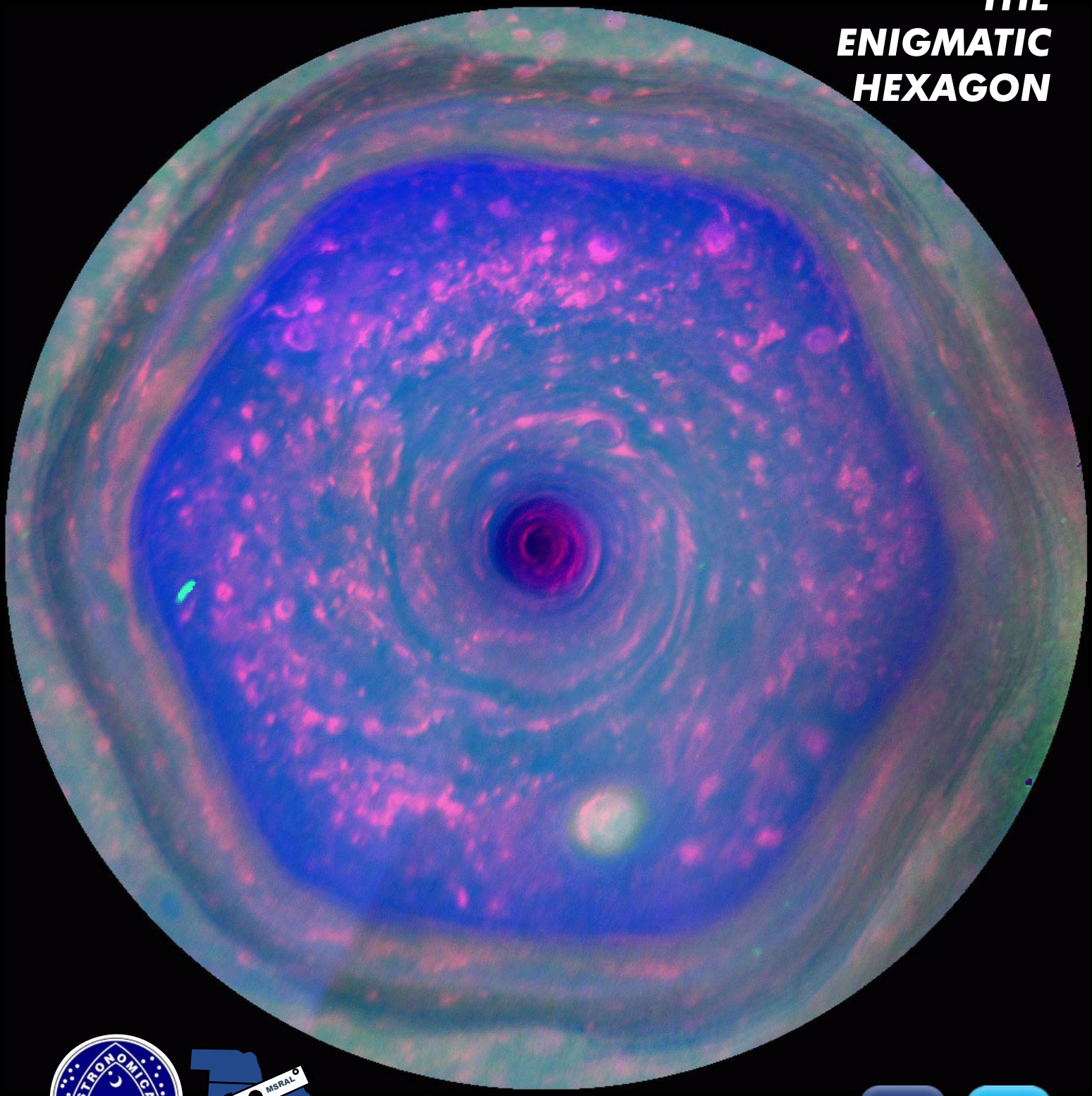
The Prairie Astronomer

September 2018 Volume 59, Issue #9

THE ENIGMATIC HEXAGON



Night Sky Network

The Newsletter of the Prairie Astronomy Club

The Prairie Astronomer

NEXT PAC MEETING: September 25 at 7:30pm

PROGRAM

Instead of a program we will meet at Branched Oak Observatory.

FUTURE PROGRAMS

October: Club Viewing Night
November: How to Buy a Telescope
December: To be announced

Buy the book! The Prairie Astronomy Club: Fifty Years of Amateur Astronomy.
Order online from Amazon or lulu.com.

CONTENTS

Cover: This colorful view from NASA's Cassini mission is the highest-resolution view of the unique six-sided jet stream at Saturn's north pole known as "the hexagon." This movie, made from images obtained by Cassini's imaging cameras, is the first to show the hexagon in color filters, and the first movie to show a complete view from the north pole down to about 70 degrees north latitude

Credit NASA

EVENTS

PAC Meeting
Tuesday September 25, 2018, 6:30pm

SouthPointe Pavilians Astronomy Scavenger Hunt
Friday, October 19th 7-9 pm

PAC Meeting
Tuesday October 30, 2018, 7:30pm

PAC Meeting
Tuesday November 27, 2018, 7:30pm

2018 STAR PARTY DATES

Photo by Brian Sivill

	Star Party Date	Star Party Date
January	Jan 12th	**Jan 19th**
February	Feb 9th	**Feb 16th**
March	Mar 9th	**Mar 16th**
April	Apr 6th	**Apr 13th**
May	May 4th	**May 11th**
June	Jun 8th	**Jun 15th**
July	Jul 6th	**Jul 13th**
August	Aug 3rd	**Aug 10th**
NSP	**Aug 5th -10th**	
September	**Sep 7th**	Sep 14th
October	**Oct 5th**	Oct 12th
November	Nov 2nd	**Nov 9th**
December	Nov 30th	**Dec 7th**

Dates in **BOLD** are closest to the New Moon.

PAC E-MAIL:

info@prairieastronomyclub.org

PAC-LIST:

Subscribe through GoogleGroups.
To post messages to the list, send to the address:

pac-list@googlegroups.com

ADDRESS

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Lincoln, NE 68505-0585

WEBSITES

www.prairieastronomyclub.org
https://nightsky.jpl.nasa.gov
www.hydeobservatory.info
www.nebraskastarparty.org
www.OmahaAstro.com
Panhandleastronomyclub.com
www.universetoday.com/
www.planetary.org/home/
http://www.darksky.org/

Night Sky Network

Meeting Minutes

President Jim Kvasnicka called the meeting to order at 7:30 p.m

Club star parties will be September 7 at the Cortland farm, and September 14th at Branched Oak Observatory.

Coming events include the Wildwood Star Party in Nebraska City on September 15th. The club has provided telescopes in past years and members are invited to help out again this year.

The September club meeting, on the 25th, will *not* be at Hyde Observatory, its usual venue. Instead, we will meet at Branched Oak Observatory. This is a chance for club members who have not visited Branched Oak to have a look, especially at the club-donated concrete pad.

The club is putting together an astronomy scavenger hunt at South Pointe Shopping Center, an idea that Bob Kacvinsky hatched as a result of discussions at the ALCON convention about methods of public outreach. The idea is to set up 4 to 5 telescopes at different locations in the mall, hand out clue sheets to families about the location of the telescopes and the objects they can view. Club members running the telescopes will certify that the hunter has observed each object, and clue sheets will be returned to the starting point where small prizes are awarded for successfully completing the hunt.

October 19th has been confirmed for the first (of many?) scavenger hunts with the South Pointe manager, who wanted to know ✌how big an event do we want to make this?✍ It could range anywhere from little or no advance promotion and just relying on shoppers already at the mall to a full-bore South Pointe Event , some of which draw several thousand kids. The consensus was that we want to start small, with perhaps just a mention on South Pointe's event calendar and see how it goes. Time: 7:00 - 9:00 p.m., and volunteers to bring and run telescopes will be needed. Starting point will probably be Barnes & Noble, and other store managers will be asked to help in providing prizes.

Saturday, October 27 is the likely date for Howling Homestead, the annual Halloween event at Homestead National Monument near Beatrice. While we have not yet received an official invitation, it is likely that we will, so Jim asked members to mark their calendars and, if possible, plan to participate by bringing telescopes.

Astronomical League Observing Awards: To Brett Boller - Gold Level Outreach Award and a TESS (Transiting Exoplanet Survey Satellite) Award.

At the September meeting, we will begin taking nominations for club officers, and nominations will continue to be accepted until the election that will be held at the October meeting.

xkcd.com

Observatory Update: UGC 11861 A very strange spiral galaxy

Rick Johnson

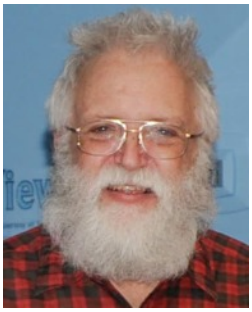
UGC 11861/PGC 67671 is a very low surface brightness galaxy in Cepheus about 60 to 62 million light-years distant. The field is very poorly studied with only this galaxy having any distance data or much else for that matter. The galaxy has had two supernovae in it in the last 21 years. I have marked the location of both as neither appeared in a portion of the galaxy that had sufficient brightness for me to see stars in the area. This indicates the galaxy is heavily obscured. Its rather red color may be due to obscuring dust as well.

What drew me to this galaxy was its very odd arm structure, especially the somewhat blue, apparently detached, arm segment just above its more reasonable spiral structure. As with my images this summer the smoke from fires to my north and out in Colorado, the West Coast and British Columbia took a tole on my image. How much blue I needed to add back was more than eXcalibrator could handle. At least its results were no better than my unadjusted image. I adjusted blue and green to give a good mix of star colors. Also, 16 Cephi that put a strong halo into the image is F5 so I adjust until that star (not its glare) was mostly white with a tinge of blue in color. I was unable to find any color images of this field other than a very deep image of the "Shark Nebula that shows it at low resolution. That image doesn't make it as red as my smoke damaged image would indicate. Still, if I push to that image's color then the general stars become way too blue.

I had to use a lot of data to try and piece this together. All that were of a density that could add something are included so there are 7 weak luminance images, 4 rather strong red images and 4 weak blue images. Only 2 green images were usable but that color is easy to adjust for so that wasn't a problem. This is one that I should put on the reshoot list. So why did I take a low surface brightness galaxy through smoke? I didn't intend to but screwed up the manual selection so the system reverted to what the automation wanted to take.

My usual method of eliminating the large circular halo around bright stars with some blue color didn't work thanks to the dust. I just left it in as it didn't bother the galaxy and any attempt to remove it would be more noticeable than simply leaving it in.

There is a pair of blue stars toward the lower left that have some blue fuzz around them. I think this due to smoke and my pushing blue way into the noise level. SIMBAD knows of nothing but the stars at this location. But just in case it is real (there's a hint of something in the blue POSS II plate) I left it in.



The last few smoky images are showing smoke starting to coat my filters. I try and set the filter to H alpha when I shut down the camera as I use it least so if it gets hit by spiders, dust or something else, I can clean it at leisure. I failed and left the luminance filter exposed for several of the worst smoke days. That is causing some spikes, long and short on some stars. Due to the background dust in the image, I was unable to remove them without making the image worse so left them in this and a couple prior images. Several more are yet to be processed so I expect they too will have this issue. I've since taken the camera off and cleaned the filters for images taken in September, assuming the smoke ever leaves.

Full image at 1" per pixel

October Observing: What to View

Jim Kvasnicka

This is a partial list of objects visible for the upcoming month.

Planets

Venus: Drops out of view on October 7th and reaches Inferior Conjunction on the 26th.
Mercury: Very low in the west just after sunset.
Jupiter: Dims to magnitude -1.7 setting about an hour after the Sun.
Saturn: Magnitude 0.6 setting around 11:00 pm.
Mars: Dims to magnitude -0.6 with a disk 12" wide.
Uranus: Reaches opposition on October 23rd in Aries at magnitude 5.7.
Neptune: Magnitude 7.8 in Aquarius.

Messier List

M11: The Wild Duck Cluster in Scutum.
M16: Open cluster (Eagle Nebula) in Serpens.
M17: Omega or Swan Nebula in Sagittarius.
M18: Open cluster in Sagittarius.
M24: The Small Sagittarius Star Cloud.
M25: Open cluster in Sagittarius.
M26: Open cluster in Scutum.
M55: Class XI globular cluster in Sagittarius.
M75: Class I globular cluster in Sagittarius.

Last Month: M13, M14, M22, M28, M54, M69, M70, M92
Next Month: M27, M30, M56, M57, M71, M72, M73

NGC and other Deep Sky Objects

NGC 7009: The Saturn Nebula in Aquarius.
NGC 7293: The Helix Nebula in Aquarius, use an OIII filter.
NGC 7331: Elongated galaxy in Pegasus.
NGC 7479: Galaxy in Pegasus.
NGC 7606: Galaxy in Aquarius.
NGC 7814: Elongated galaxy in Pegasus.

Double Star Program List

8 Lacerta: Four white stars.
Beta Cephei: White and blue stars.
Struve 2816: White and two blue stars.
Xi Cephei: Yellow pair.
Delta Cephei: Yellow primary with a pale blue secondary.
Eta Persei: Bright yellow primary with a light blue secondary.
Struve 331: White and pale blue stars.
Epsilon Pegasi: Yellow primary with a white secondary.

Challenge Object

NGC 7769/7770/7771: Trio of faint galaxies in Pegasus.

xkcd.com

Branched Oak Observatory's StarBQ

Photo by Mark Dahmke

Panasonic Lumix G9 with 20mm f/1.7 lens on iOptron Sky Tracker Pro

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A Trip Through the Milky Way

Jane Houston Jones and Jessica Stoller-Conrad

Feeling like you missed out on planning a last vacation of summer? Don't worry—you can still take a late summertime road trip along the Milky Way!

The waning days of summer are upon us, and that means the Sun is setting earlier now. These earlier sunsets reveal a starry sky bisected by the Milky Way. Want to see this view of our home galaxy? Head out to your favorite dark sky getaway or to the darkest city park or urban open space you can find.

While you're out there waiting for a peek at the Milky Way, you'll also have a great view of the planets in our solar system. Keep an eye out right after sunset and you can catch a look at Venus. If you have binoculars or a telescope, you'll see Venus's phase change dramatically during September—from nearly half phase to a larger, thinner crescent.

Jupiter, Saturn and reddish Mars are next in the sky, as they continue their brilliant appearances this month. To see them, look southwest after sunset. If you're in a dark sky and you look above and below Saturn, you can't miss the summer Milky Way spanning the sky from southwest to northeast.

This illustration shows how the summer constellations trace a path across the Milky Way. To get the best views, head out to the darkest sky you can find. Credit: NASA/JPL-Caltech

You can also use the summer constellations to help you trace a path across the Milky Way. For example, there's Sagittarius, where stars and some brighter clumps appear as steam from a teapot. Then there is Aquila, where the Eagle's bright Star Altair combined with Cygnus's Deneb and Lyra's Vega mark what's called the "summer triangle." The familiar W-shaped constellation Cassiopeia completes the constellation trail through the summer Milky Way. Binoculars will reveal double stars, clusters and nebulae all along the Milky Way.

Between Sept. 12 and 20, watch the Moon pass from near Venus, above Jupiter, to the left of Saturn and finally above Mars!

This month, both Neptune and brighter Uranus can also be spotted with some help from a telescope. To see them, look in the southeastern sky at 1 a.m. or later. If you stay awake, you can also find Mercury just above Earth's eastern horizon shortly before sunrise. Use the Moon as a guide on Sept. 7 and 8.

Although there are no major meteor showers in September, cometary dust appears in another late summer sight, the morning zodiacal light. Zodiacal light looks like a cone of soft light in the night sky. It is produced when sunlight is scattered by dust in our solar system. Try looking for it in the east right before sunrise on the moonless mornings of Sept. 8 through Sept 23.

You can catch up on all of NASA's current—and future—missions at www.nasa.gov

Astro-Man

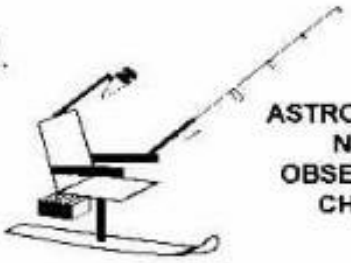
By: Dave Scherping

To assist you in preparing for the Nebraska Star Party, Astro-Man has developed the following checklist of essential supplies:

1.  **CLOUD FILTER GLASSES** — Just in case the "Clear Skies Coordinator" lets you down. Available at most convenience stores.

2.  **ANTI-MILKY WAY GLASSES** — Specially designed to prevent the bright NSP Milky Way from ruining your night vision. Features dark zones to safely shield you from this extremely bright light source. May be purchased at any of the Astronomy Supply Stores in Valentine, NE, or you can make your own using clear glasses & flat black paint.

3.  **HYPER-PROBABILITY DEVICE** — A high quality HPD will nearly guarantee that you win a door prize and will prove to be extremely useful at the Rosebud Casino. Available at all "Crooks R Us" locations.

4.  **ASTRO-MAN'S NSP OBSERVING CHAIR** — Allows you to observe the sky through 11x80 binoculars, while you Bar-B-Q, water ski, and fish for walleye all at the same time !!! Maximize your enjoyment at NSP ... time will no longer be an issue. Available in the popular slalom version and in the new "easy-to-use" 2-ski version for beginners. (Spatula,worms, & solar filters are extra). Manufactured, sold, and distributed exclusively by ASTRO-MAN, INC.

5.  **ANTI-AVERTED IMAGINATION GLASSES** — Just insert slides of your favorite deep sky objects into these specially designed glasses, and you'll never again leave the eyepiece wondering if you really saw it. Very handy while working on the "Great NSP Deep Sky Challenge" Warning: AAI glasses should never be used while driving! (Astroman found out the hard way)

Focus on Constellations: Lacerta

Jim Kvasnicka

Lacerta, the Lizard is a small constellation of faint stars covering only 201 square degrees. It is positioned between Cygnus, Cepheus, Andromeda, and Pegasus. Its northern edge extends into the Milky Way and contains some fine open clusters. The constellation also has some nice double stars.

Best Objects

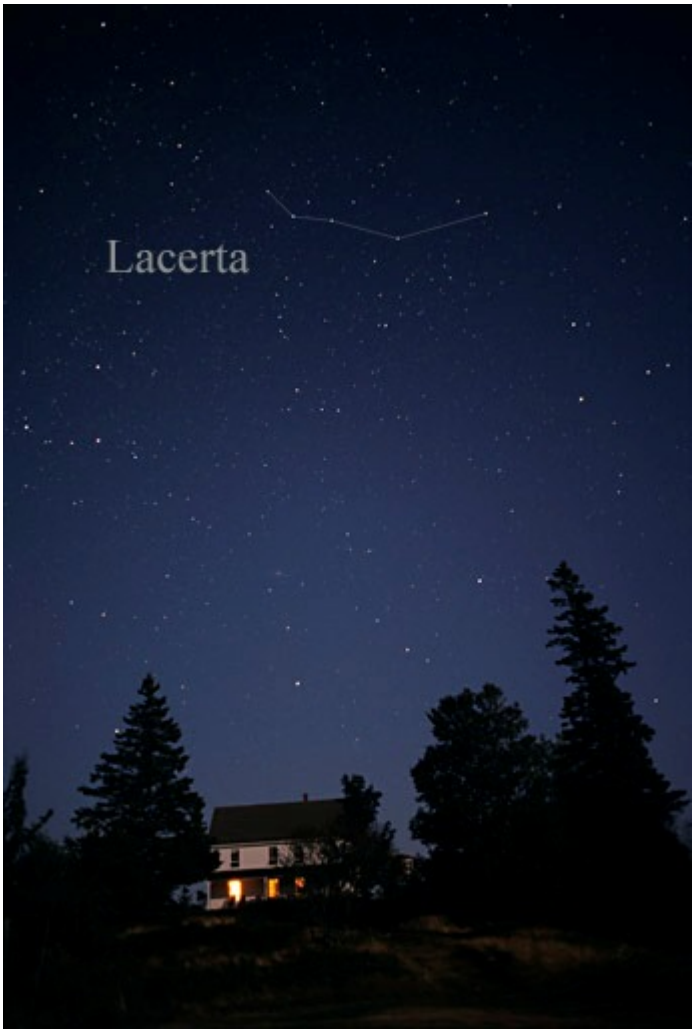
Double Stars: h975, Σ2894, Σ2902, 9 Lac
Open Clusters: NGC 7209, NGC 7243, IC 1434

Mythology

Lacerta was created by the Polish astronomer Johannes Hevelius in the late 17th century. The other constellations introduced by Hevelius include Leo Minor, Lynx, Scutum, Sextans, and Vulpecula.

Number of Objects Magnitude 13.0 and Brighter

Galaxies: 9
Globular Clusters: 0
Open Clusters: 6
Planetary Nebulae: 3
Dark Nebulae: 0
Bright Nebulae: 0
SNREM: 0



Till Credner - Own work: AlltheSky.com 3.0

In Full View: Saturn's Streaming Hexagon

A new long-term study using data from NASA's Cassini spacecraft has revealed a surprising feature emerging at Saturn's northern pole as it nears summertime: a warming, high-altitude vortex with a hexagonal shape, akin to the famous hexagon seen deeper down in Saturn's clouds.

The finding, published Sept. 3 in Nature Communications, is intriguing, because it suggests that the lower-altitude hexagon may influence what happens above, and that it could be a towering structure hundreds of miles in height.

When Cassini arrived at the Saturnian system in 2004, the southern hemisphere was enjoying summertime, while the northern was in the midst of winter. The spacecraft spied a broad, warm high-altitude vortex at Saturn's southern pole but none at the planet's northern pole. The new study reports the first glimpses of a northern polar vortex forming high in the atmosphere, as Saturn's northern hemisphere approached summertime. This warm vortex sits hundreds of miles above the clouds, in the stratosphere, and reveals an unexpected surprise.

"The edges of this newly-found vortex appear to be hexagonal, precisely matching a famous and bizarre hexagonal cloud pattern we see deeper down in Saturn's atmosphere," said Leigh Fletcher of the University of Leicester, lead author of the new study.

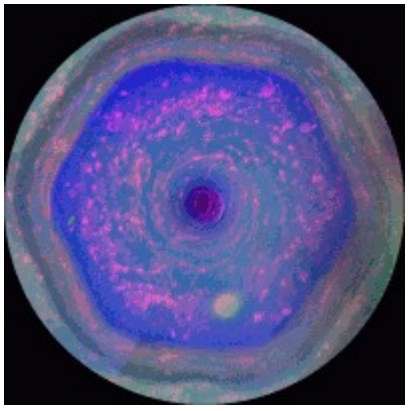
Saturn's cloud levels host the majority of the planet's weather, including the pre-existing north polar hexagon. This feature was discovered by NASA's Voyager spacecraft in the 1980s and has been studied for decades; a long-lasting wave potentially tied to Saturn's rotation, it is a type of phenomenon also seen on Earth, as in the Polar Jet Stream.

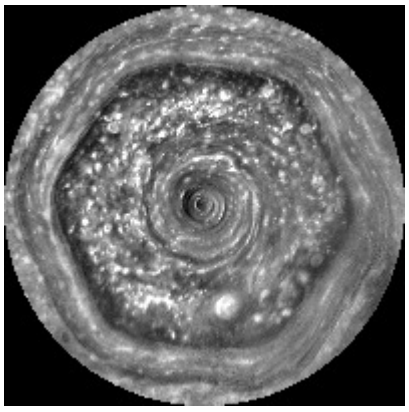
Its properties were revealed in detail by Cassini, which observed the feature in multiple wavelengths -- from the ultraviolet to the infrared -- using instruments including its Composite Infrared Spectrometer (CIRS). However, at the start of the mission this instrument could not peer farther up into the northern stratosphere, where temperatures were too cold for reliable CIRS infrared observations, leaving these higher-altitude regions relatively unexplored for many years.

"The mystery and extent of the hexagon continue to grow, even after Cassini's 13 years in orbit around Saturn," said Linda Spilker, Cassini project scientist. "I look forward to seeing other new discoveries that remain to be found in the Cassini data."

For more on the new study, visit the European Space Agency's story here:

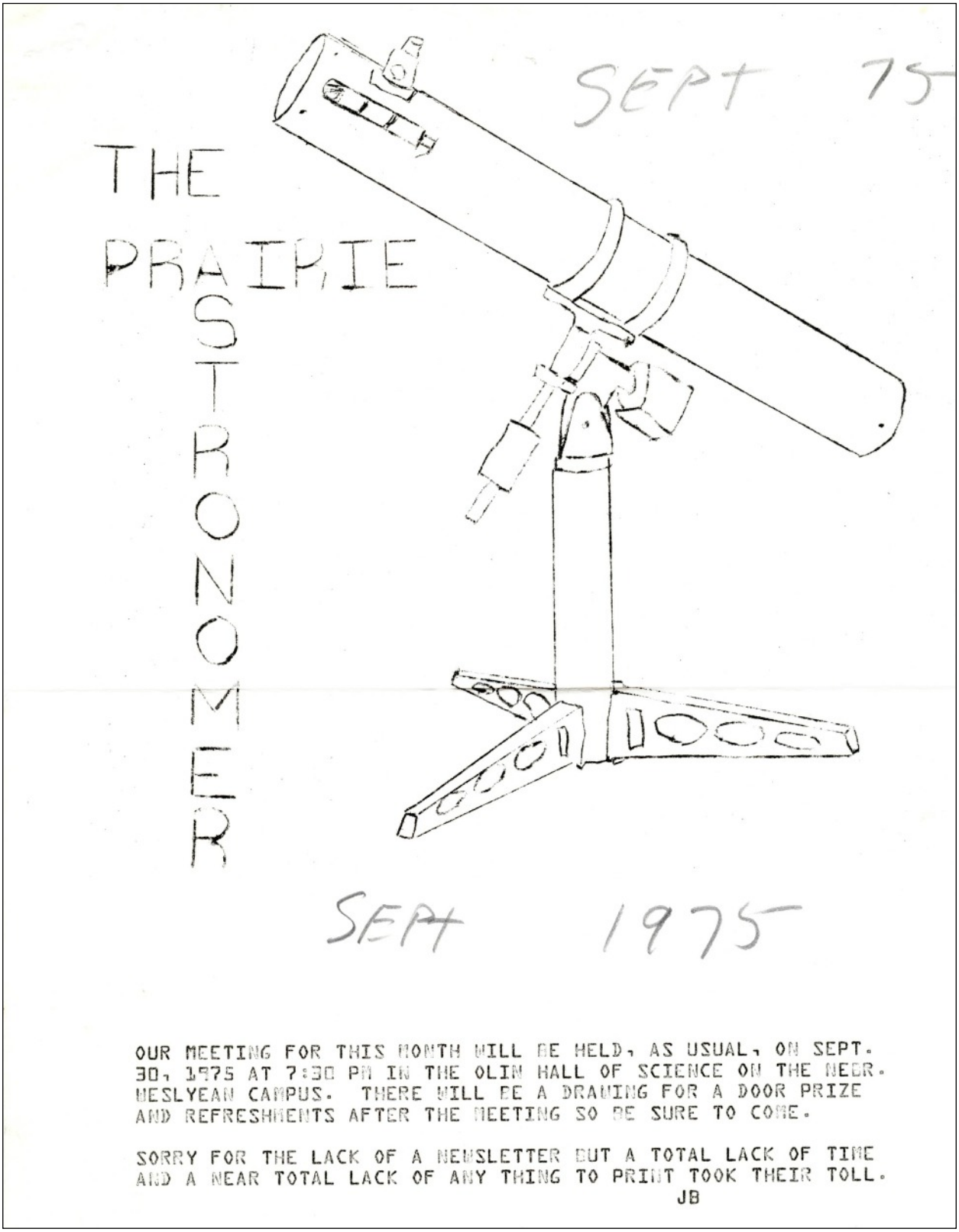
http://sci.esa.int/cassini-huygens/60589-saturn-s-famous-hexagon-may-tower-above-the-clouds/





From the Archives: September, 1975

Here's an example of one of the occasional single page newsletters.



SEPT 75

THE PRAIRIE ASTRONOMER

SEPT 1975

OUR MEETING FOR THIS MONTH WILL BE HELD, AS USUAL, ON SEPT. 30, 1975 AT 7:30 PM IN THE OLIN HALL OF SCIENCE ON THE NEAR. WESLYEAN CAMPUS. THERE WILL BE A DRAWING FOR A DOOR PRIZE AND REFRESHMENTS AFTER THE MEETING SO BE SURE TO COME.

SORRY FOR THE LACK OF A NEWSLETTER BUT A TOTAL LACK OF TIME AND A NEAR TOTAL LACK OF ANY THING TO PRINT TOOK THEIR TOLL.

JB

CLUB MEMBERSHIP INFO

REGULAR MEMBER - $30.00 per year. Includes club newsletter, and 1 vote at club meetings, plus all other standard club privileges.

FAMILY MEMBER - $35.00 per year. Same as regular member except gets 2 votes at club meetings.

STUDENT MEMBER - $10.00 per year with volunteer requirement.

If you renew your membership prior to your annual renewal date, you will receive a 10% discount.

Club members are also eligible for special subscription discounts on Sky & Telescope Magazine.

CLUB TELESCOPES

To check out one of the club telescopes, please contact a club officer. Scopes can be checked out at a regular club meeting and kept for one month. Checkout can be extended for another month if there are no other requests for the telescope, but you must notify a club officer in advance.

100mm Orion refractor: David Pennington
10 inch Meade Dobsonian: Lee Taylor
13 inch Truss Dobsonian: Available

CLUB APPAREL

Order club apparel from cafepress.com:

Shop through Amazon Smile to automatically donate to PAC:

amazonsmile

CLUB OFFICERS

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The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular $30/yr, Family $35/yr**. Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585**. For other club information, please contact one of the club officers listed to the right. Newsletter comments and articles should be submitted to: **Mark Dahmke, P. O. Box 5585, Lincoln, NE 68505 or** mark@dahmke.com**,** no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.