

CONSTELLATION

the official publication of Bucks-Mont Astronomical Association, Inc

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Scott Petersen, editor

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MY 2017 SOLAR ECLIPSE TRAVEL JOURNAL

– *by Gary Sprague*

We packed the trailer and left full of excitement and anticipation. Our first 2 days were spent at Bald Eagle State park, near Lock Haven. What a great campground, by the way. I have my camera, scope and binoculars and all the necessary filters. Night skies at the Park were relatively clear but the only negative was fog tends to come into the valley at night.

Talked to a few fellow campers and the overwhelming trend is almost EVERYBODY knows about the eclipse and a whole bunch of people are planning to travel to see it. The truck driver we met at an Illinois rest stop is stopping near Jackson Hole on his way back from a Seattle run. A new retiree we met at an Illinois campground is heading off on his first “big” trip to Mount Rushmore, then to Casper to see the eclipse (I told him to look for Ed R.). Two “locals” we met at our Iowa campground need only drive 20 miles from their home to see the eclipse.

We made it to Kearney. Woohoo! Had to drive through some horrible storms in Iowa but lost them when we got to Nebraska. Unfortunately, the weather forecast here is somewhat unsettled, storms are rolling through. Kearney and Ravenna (a small town, nearby) have huge programs all weekend long. Kearney has NASA astronaut Mike Fincke doing a meet and greet; they’re going all out.

We drove up towards Ravenna, to see if we could find a good observing location. As luck would have it, the small town of Pleasanton, population 360, is only a few miles off the line for totality, and they have a small park (with toilets, picnic tables and everything. We checked with the town post office and no “official” activities were planned for the town; except of course releasing all of the elementary school students to watch the eclipse.

Weather in the Midwest is unpredictable and changes rapidly! Last night the mother all storms rolled through. Thunder, lightning and heavy rain; more of the same today. But tonight it’s all moved away with a glorious evening sky; Jupiter is shining brightly in the southwest with a horizon that goes on forever in all directions. Monday is too far away to worry, but current forecasts call for partly cloudy! It’s Sunday night and all the forecasts are for cloudy skies. However, checking further the forecast is for high cirrus clouds, let’s hope!

Monday morning looks clear! There are a few high cirrus clouds (as expected) but we loaded our picnic and “gear” and left for Pleasanton, hoping for the best!

The day could not have been better! Very light cirrus clouds had no effect as we followed the exciting first contact and the countdown to totality. School children running everywhere with their home made eclipse viewers. All the viewing glasses I took were used. We had our picnic followed by a short eclipse 101 session. Everyone watched the shadows sharpen along with the weird twilight as we all waited for approaching totality.

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- Eclipse, continued -



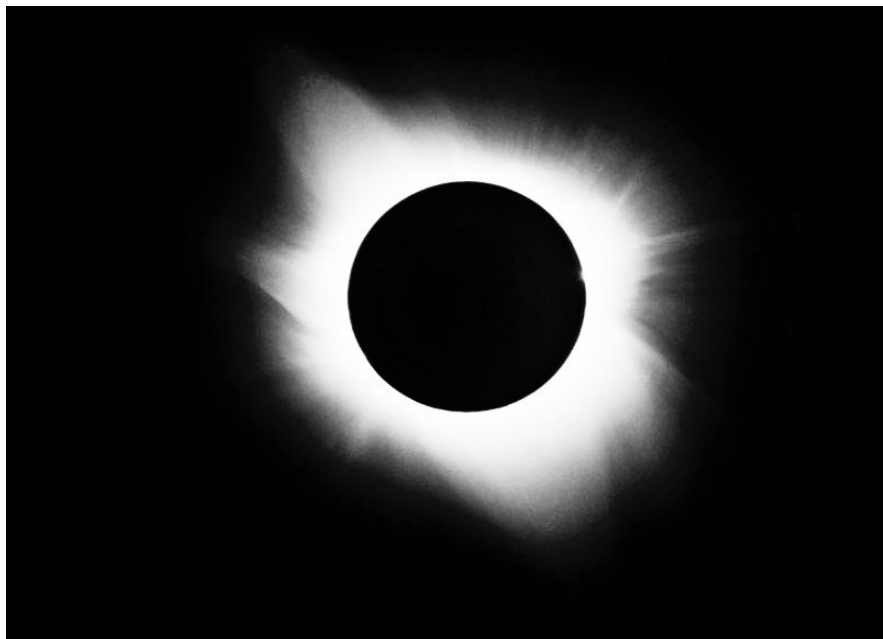
Second contact finally arrived, and TOTALITY! The cirrus clouds were all gone! We had a completely unobstructed view of the total eclipse. Beautiful corona, majestic 360 degree sunset/sunrise.

Everyone was blown away!

In the words of my wife, "It was a wonderful experience and I am anticipating the next one in 2024."

- *BMAA co-president Gary Sprague provided this diary of his Solar Eclipse trip* [-ed]

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- *BMAA member Brad Miller photographed Solar Eclipse totality at Sumter SC* [-ed]

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Bucks-Mont Astronomical Association, Inc
General Meeting Minutes
September 6, 2017

Location: Upper Dublin Lutheran Church, 411 Susquehanna Road, Ambler PA 19002

Officers present: Gary Sprague (co-president), Dwight Dulsky (co-president),
Lee Zagar (vice-president) and Robert Mittel-Carey (secretary)

Meeting called to order by Gary Sprague at 7:30p. In attendance: 20 members and guests

- Star watch at Tyler State Park had about 50 visitors
- Gary reviewed the club calendar for September – October
- There is no updates on the status of access to Coyle Field
- Bernie asked about interest in the 2019 Observer's Handbook; about a dozen or members expressed interest.
- Outreach recap for July – September
- The Sun had an X9+ CME Earth bound

➤ **Main Topic: Eclipse – Member's Eclipse Stories**

Various members gave quick recaps of their eclipse travel experiences from West to East. Overall great success, but there were a few mishaps along the way.

Respectfully submitted,
Robert Mittel-Carey, BMAA secretary

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The CONSTELLATION is the official publication of the Bucks-Mont Astronomical Association, Inc, a 501(c)(3) non-profit organization incorporated in the Commonwealth of Pennsylvania and exists for the exchange of ideas, news, information and publicity among the BMAA membership, as well as the amateur astronomy community at large. The views expressed are not necessarily those of BMAA, but of the contributors and are edited to fit within the format and confines of the publication. Unsolicited articles relevant to astronomy are welcomed and may be submitted to the Editor. Reprints of articles, or complete issues of the CONSTELLATION, may be available by contacting the Editor at the address listed below, and portions may be reproduced with permission, providing proper acknowledgment is made and a copy of that publication is sent to the Editor. Contents of this publication, and format (hard copy or electronic) are copyright ©2017 BMAA, Inc. Submission deadline for articles is the 15th of the month prior to quarterly publication.

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Bucks-Mont Astronomical Association, Inc
General Meeting Minutes
October 4, 2017

Location: Upper Dublin Lutheran Church, 411 Susquehanna Road, Ambler PA 19002

Officers present: Gary Sprague and Dwight Dulsky (co-presidents), Lee Zager (vice-president),
Ed Radomski (treasurer) and Robert Mittel-Carey (secretary)

Meeting called to order by Gary Sprague at 7:30p. In attendance: 65+ members and guests

- Gary reviewed the following:
 - Ron Wenig purchased the 4.5” dob
 - Club events September – October
 - Upcoming club calendar events
 - November 1st meeting: “Free Ranging” with Bernie
 - Pecha Kucha Night at Newtown Theatre; November 7-9
 - December 6th meeting: “Show & Tell”
 - Request from Council Rock South for a starwatch in late November or early December.
 - A brief recap of our hit or miss (weather-wise) starwatches for this year.
 - The End of Cassini; with a brief discussion on why it was purposefully crashed into Saturn.
- Share Time:
 - Bernie shared several observation notes
 - Igor shared many great photos from his Imaging Log including: the solar eclipse from Virginia Beach, Florence 3122, M94, NGC 5907, M27, LBN 408, Sharpless 101, NGC 7217, M57.
 - Chuck shared a few pieces of Astronaut memorabilia
- **Main Topic: On Supernovae, and Not Touching Telescopes**
Dr. Chris D’Andrea of UPenn, gave a presentation on how he pursues his professional career with some great photos and stories.

Respectfully submitted,
Robert Mittel-Carey, BMAA secretary

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Editor's Note

The CONSTELLATION is your BMAA club newsletter and its success depends solely on your input. Please submit articles to me at: constellation@bma2.org. I am trying to maintain a quarterly publication cycle, on or about the Solstices and Equinoxes with supplements as required. Thanks.

- Scott Petersen, editor

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On Supernovae, and Not Touching Telescopes

- by Dr Chris D'Andrea

At the October BMAA general meeting Dr Chris D'Andrea, a supernova cosmologist from the University of Pennsylvania, discussed how different observing is for a professional astronomer.

Astronomical observations are made with the purpose of discovering new types of objects or phenomena, or to understand unexplained processes. As such 'observing' is synonymous with 'collecting data'; information is captured on a camera or another sophisticated device to be analyzed later. There is very little real interaction with the night sky when observations are made!

To study different types of objects and physical processes, astronomers use telescopes that observe light at many different energies: gamma rays, x-rays, ultraviolet, infrared, and radio. Some of these have to be in space, as our atmosphere blocks out these types of light. Space telescopes are also useful because they allow us to observe light undistorted by traveling through the atmosphere, creating crisper images.

Optical telescopes can be very large; the biggest today have mirrors that are about 10 meters in diameter. Three are currently in construction that will be between 23 and 40 meters! The best telescopes are expensive, and are built by consortiums of universities or countries, meaning that to use these facilities astronomers submit competitive proposals for the limited time if they are qualified.

To explain specific ways in which observing is different as a professional astronomer, Chris showed pictures and told stories relating to three different observatories that he has visited and used. These were the 8 meter Subaru Telescope in Hawaii is the National Observatory of Japan; the 8 meter Very Large Telescope in Chile is part of the European Southern Observatory; and the 4 meter Blanco Telescope is part of the Inter-American Observatory in Chile, run by the United States.

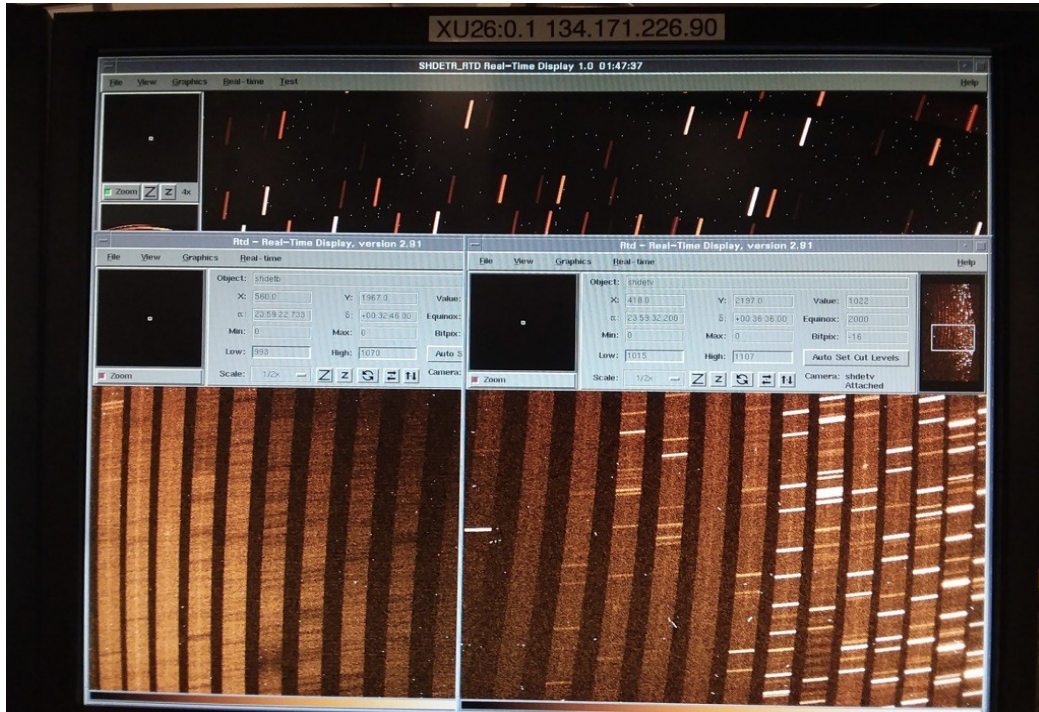
For example, astronomers at these observatories perform all observations from a control room, sometimes not in the same building as the telescope, which is filled with huge banks of computer monitors. The astronomer only specifies observing coordinates and analyzes the data, while observatory employees control the telescope and the instrumentation, each of which are worth millions of dollars! But just like for all astronomers weather plays its role, with results varying from a snowed out night of observing in Hawaii to atmospheric 'seeing' distortions of less than 0.4 arcseconds in Chile!



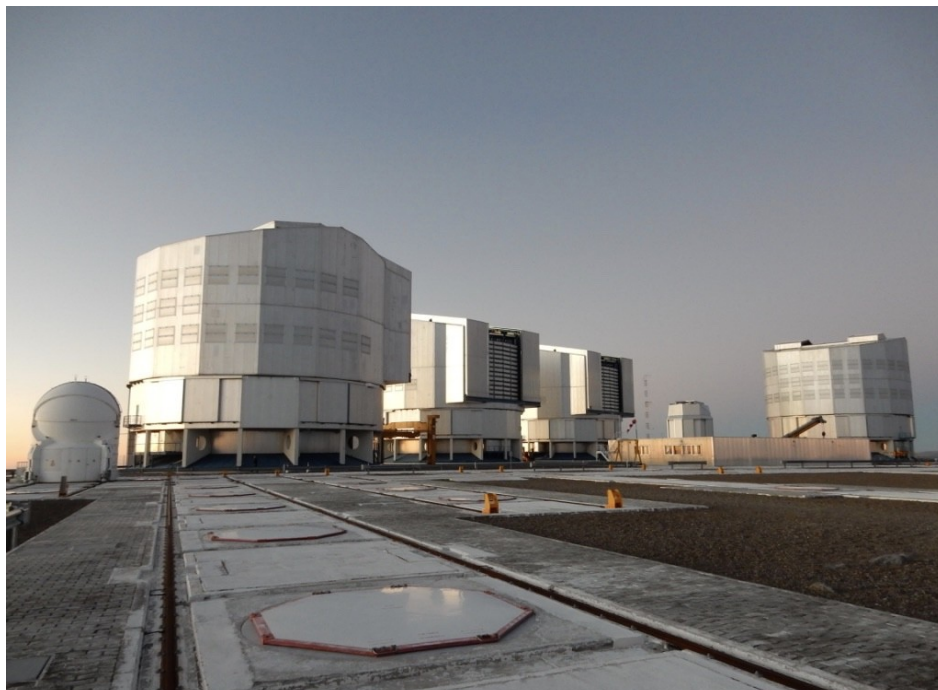
False-color gri image combined from over 75 hours of observing at the 4m Blanco telescope in Chile. Image is 9 by 18 arcminutes, and contains over 14,000 detected objects, most of which are galaxies.

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- D'Andrea, continued -



Example of the real-time data the astronomer sees when observing. This picture is from an instrument on the VLT that takes spectra spanning from 300 to 2400 nanometers; prominent bands are sky lines



The Very Large Telescope in Chile. There are four individual 8-meter telescopes, plus several smaller -- but still large! -- telescopes.

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- D'Andrea, continued -



What it looks like inside the accommodation at the VLT; though in the middle of the desert, the amenities are okay!



The control room at the Subaru Observatory.

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- D'Andrea, continued -



View of the large collection of domes for the smaller telescopes at the Inter-American Observatory. Often scopes from different countries or collaborations of universities share a site to reduce expenses

Chris reports that he is still in the market for his own telescope for his backyard, and is willing to compromise on something smaller than four meters, and will have to live with more light pollution than he is used to. However he now has to find the objects he's looking for himself, which is a challenge most professional astronomers no longer have to face.

- Dr Chris D'Andrea is a cosmologist with the Department of Physics and Astronomy, at the University of Pennsylvania, and he provided this synopsis of his presentation [-ed]

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September 2017

Cassini Says Goodbye

- by Teagan Wall

On September 15th, the Cassini spacecraft will have its final mission. It will dive into the planet Saturn, gathering information and sending it back to Earth for as long as possible. As it dives, it will burn up in the atmosphere, much like a meteor. Cassini's original mission was supposed to last four years, but it has now been orbiting Saturn for more than 13 years!

The spacecraft has seen and discovered so many things in that time. In 2010, Cassini saw a massive storm in Saturn's northern hemisphere. During this storm, scientists learned that Saturn's atmosphere has water vapor, which rose to the surface. Cassini also looked at the giant storm at Saturn's north pole. This storm is shaped like a hexagon. NASA used pictures and other data from Cassini to learn how the storm got its six-sided shape.

Cassini also looked at some of Saturn's moons, such as Titan and Enceladus. Titan is Saturn's largest moon. Cassini carried a lander to Titan. The lander, called Huygens, parachuted from Cassini down to the surface of the moon. It turns out, Titan is quite an exciting place! It has seas, rivers, lakes and rain. This means that in some ways, Titan's landscape looks a bit like Earth. However, its seas and rivers aren't made of water—they're made of a chemical called methane.

Cassini also helped us learn that Saturn's moon Enceladus is covered in ice. Underneath the ice is a giant liquid ocean that covers the whole moon. Tall geysers from this ocean spray out of cracks in the ice and into space, like a giant sneeze. Cassini flew through one of these geysers. We learned that the ocean is made of very salty water, along with some of the chemicals that living things need.

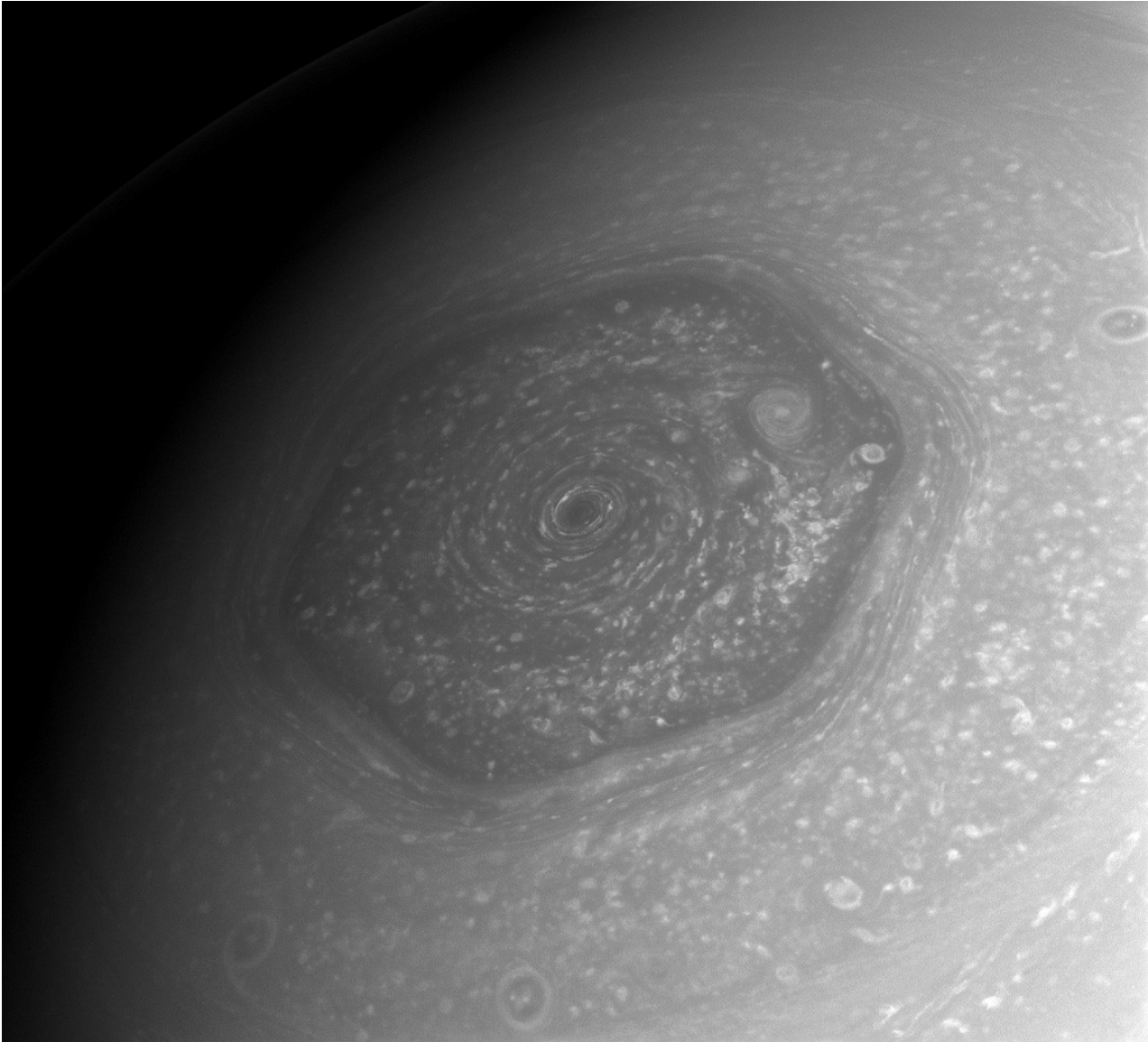
If there is life on Enceladus, NASA scientists don't want life from Earth getting mixed in. Tiny living things may have hitched a ride on Cassini when it left Earth. If these germs are still alive, and they land on Enceladus, they could grow and spread. We want to protect Enceladus, so that if we find life, we can be sure it didn't come from Earth. This idea is called planetary protection.

Scientists worry that when Cassini runs out of fuel, it could crash into Titan or Enceladus. So years ago, they came up with a plan to prevent that from happening. Cassini will complete its exploration by diving into Saturn—on purpose. The spacecraft will burn up and become part of the planet it explored. During its final plunge, Cassini will tell us more about Saturn's atmosphere, and protect the moons at the same time. What an exciting way to say goodbye!

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- Space Place, continued -

To learn more about Saturn, check out NASA Space Place: <https://spaceplace.nasa.gov/all-about-saturn>



*Caption: This image of the hexagonal storm on Saturn's north pole was taken by Cassini in 2013.
Image credit: NASA/JPL-Caltech/Space Science Institute*

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit spaceplace.nasa.gov to explore space and Earth science!

- Space Place is provided to local astronomy clubs by NASA [-ed]

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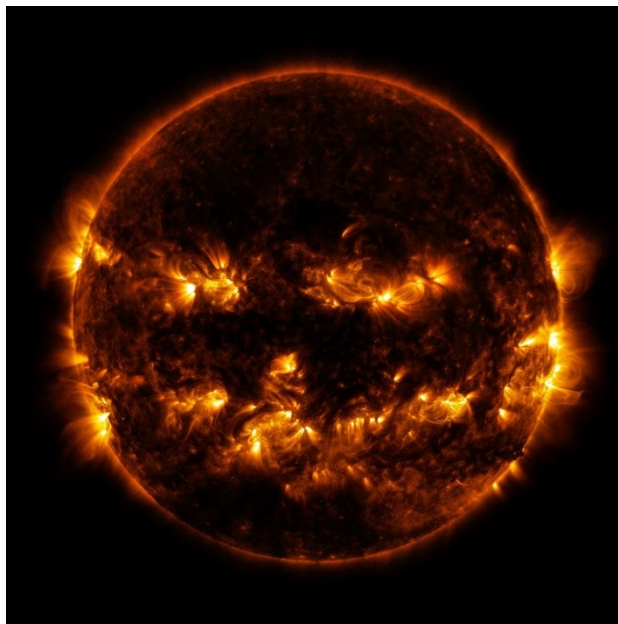


October 2017

Spooky in Space: NASA Images for Halloween

- by *Linda Hermans-Killiam*

Have you ever seen a cloud that looks sort of like a rabbit? Or maybe a rock formation that looks a bit like an elephant? Although you know that a cloud isn't *really* a giant rabbit in the sky, it's still fun to look for patterns in images from nature. Can you spot some familiar spooky sites in the images below?



Credit: NASA/GSFC/SDO

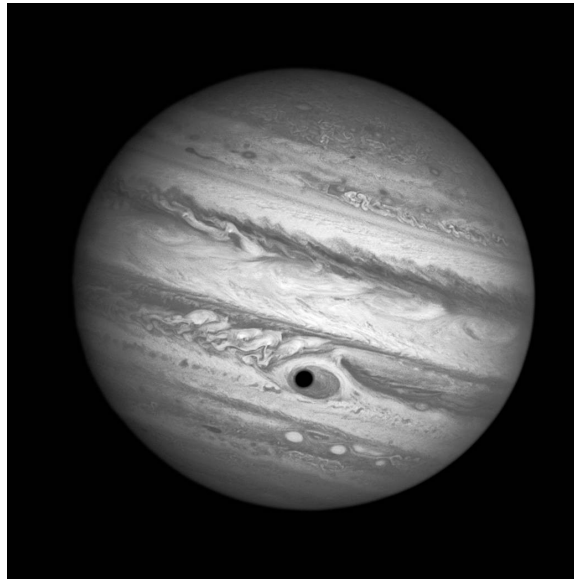
This might look like the grinning face of a jack-o'-lantern, but it's actually a picture of our Sun! In this image, taken by NASA's Solar Dynamics Observatory, the glowing eyes, nose and mouth are some of the Sun's active regions. These regions give off lots of light and energy. This causes them to appear brighter against the rest of the Sun. Active regions are constantly changing locations on the Sun. On the day this image was captured, they just happened to look like a face!

To learn some fun planet facts and make a planet mask, check out NASA Space Place:

<https://spaceplace.nasa.gov/planet-masks>

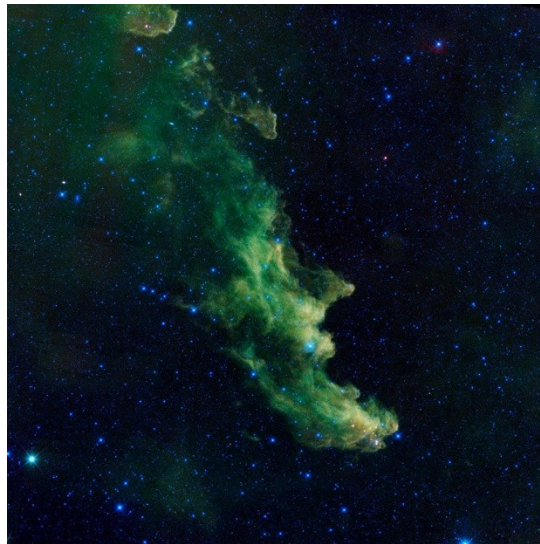
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- Space Place, continued -



Credit: NASA/ESA/A. Simon (Goddard Space Flight Center)

This is a Hubble Space Telescope image of Jupiter. Do you notice something that looks like a big eye peeking back at you? That's actually the shadow of Jupiter's moon Ganymede as it passed in front of the planet's Great Red Spot. Jupiter's Great Red Spot is a gigantic, oval shaped storm that is larger than Earth and is shrinking. It has been on Jupiter for several hundred years, and its winds can swirl up to 400 miles per hour!

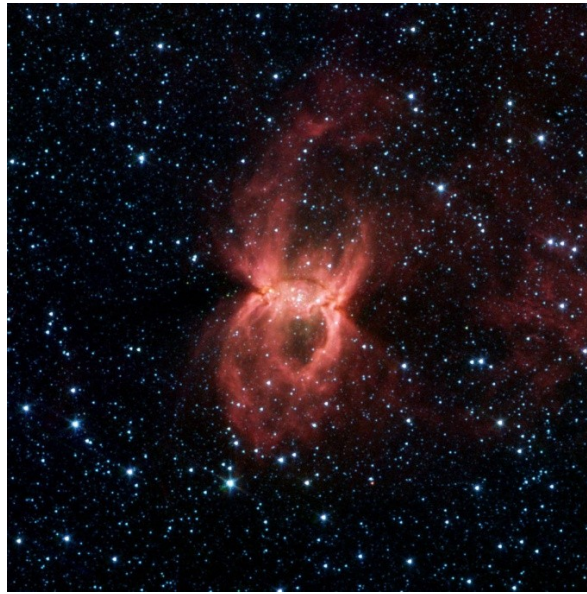


Credit: NASA/JPL-Caltech

Can you see the profile of a witch in this image? This image, from NASA's Wide-Field Infrared Survey Explorer, shows the Witch Head nebula. The nebula is made up of clouds of dust heated by starlight. These dust clouds are where new stars are born. Here, the dust clouds happen to be in the shape of an open mouth, long nose and pointy chin.

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- Space Place, continued -



Credit: NASA/JPL-Caltech/Univ. of Wisc.

The Black Widow Nebula looks like a giant spider in space. It is a huge cloud of gas and dust containing massive young stars. Radiation and winds from these stars push the dust and gas around, creating a spider-like shape. This image is from NASA's Spitzer Space Telescope.



Credit: NASA/JPL-CALTECH/MSSS

Did a skeleton lose one of its leg bones on Mars? Nope! It's just an image of a Martian rock. NASA's Curiosity rover captured this image. The rock was probably shaped to look this way over time by wind or water. If life ever existed on Mars, scientists expect that it would be small organisms called microbes. So, it isn't likely that we'll ever find a large fossil on Mars!

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- Space Place is provided by NASA to local astronomy clubs [-ed]

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BMAA Registration Form

- ☐ Renewal
☐ New Member

Name _____

Address _____

Telephone

Home _____

Cell _____

E-Mail _____

Dues are **\$30.00** for an individual or **\$40.00** for a family membership (more than one person at same address).

Make check payable to **BMAA** and send to:

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