Celestial Observer

The Official Newsletter of the
Amateur Observers' Society of NY, Inc.
A 501(c)3 organization

Jan 2018

459 Little East Neck Rd.
West Babylon, NY 11704-6520
www.aosny.org **(F) 360-248-3129**

Next Meeting: Sunday, Jan 7, 1:15pm
Hofstra University Berliner Hall, Rm 117
Bldg 62, California Ave, Hempstead, NY

In case of inclement weather, or other unusual situation, please call Hofstra at 516-463-7669
www.facebook.com/pages/Amateur-Observers-Society-of-New-York-AOSNY/368529386242

The President's Message-Sue Rose

HAPPY NEW YEAR! Let's hope for clear skies this year.

Thanks to **Jeff Norwood** for bringing his wares to the Dec meeting and showing off the latest gadgets. I hope you got a chance to check them out. For any who missed it, you can go to Jeff's store, Camera Concepts, in Stony Brook, www.cameraconcepts.com. In Jan, **Frank Melillo**, chair of the ALPO Mercury Division, will give us the latest scoop on the inner planets from his personal observations from here on LI, thereby proving that there is much that can be learned, even from our light polluted skies. **'The Secrets of Venus in Ultraviolet and Infrared Observations'.** Please join us.

The Theodore Roosevelt Nature Center at Jones Beach will be closing for renovations in Feb for up to a year. This requires us to move all our equipment. Many thanks to those who have offered storage space. To those who have volunteered to help with the move, your assistance will be needed shortly as this needs to be accomplished in Jan. Thanks to our well attended programs at Sagamore Hill National Historic Site, home of Pres. Theodore Roosevelt, https://www.nps.gov/sahi/planyourvisit/basicinfo.htm, we have been invited to move our operations to this location. Although this may be a longer commute for some, it will be shorter for others. We will have a similar arrangement as with the Nature Center whereby we will hold public observing programs. For those who have attended previous programs, we will be moving the observing area to be closer to where the equipment is stored, near the large barn. Although we lose some of the horizon due to trees, they block much of the surrounding sky glow. The remaining sky is darker than Jones Beach, has less humidity and bug problems.

The President was a naturalist his whole life, his family having a huge role in the creation of the American Museum of Natural History, and his creation of the National Park System. The staff is enthusiastic about bringing nature/science programs to the facility, and our operation fits right in. This is a fantastic opportunity for us and we look forward to working with them in the future. Since this is a year-round facility, some rangers live on-site and the rest rooms are always open.

Boxes, vehicles and strong arms will be needed to accomplish the move in 1 month, and weather may be a factor, so arrangements will be made on the hotline. Let us know if you can help.

*** Remember, the only dumb question is the one you don't ask. ***
Friends are like stars. You don't always see them,
but you know they are always there!

The AOS expresses its deepest appreciation to Hofstra University for hosting our meetings, the Custer Institute for hosting our Suffolk Observatory, the Sierra Club Long Island Group for the 20" telescope, http://newyork.sierraclub.org/longisland/, and the East Meadow Public Library for hosting our Young Astronomer programs.

AOS Activities January and February - Linda Prince

Date/time		Event	Location
JANUARY	7 1:15 pm	**Club Meeting**	Rm. 117, Berliner Hall, California Ave., Hofstra U.
	12 sunset	**Observing sessions**	RMSP**, SMSP*
	13 sunset	**Observing sessions**	RMSP**, SMSP*
	19 sunset	**Observing sessions**	RMSP**, SMSP*
	20 sunset	**Observing sessions**	RMSP**, SMSP*
FEBRUARY	3 1 pm	**AOS Young Astronomers**	East Meadow Public Library, East Meadow
	4 1:15 pm	**Club Meeting**	Rm. 117, Berliner Hall, California Ave., Hofstra U.
	4 6-8 pm	**Stars on Sunday - *volunteers needed***	Roof of Berliner Hall, California Ave., Hofstra U.
	9 sunset	**Observing sessions**	RMSP**, SMSP*
	10 sunset	**Observing sessions**	RMSP**, SMSP*
	16 sunset	**Observing sessions**	RMSP**, SMSP*
	17 sunset	**Observing sessions**	RMSP**, SMSP*

*SMSP = Sunken Meadow State Park, Field 3 **RMSP = Robert Moses State Park, Field 2
both require NYS Parks Stargazing Permit

Recent Outreach Activities - Linda Prince

The Young Astronomers at the East Meadow Public Library participated in a fun program on stars and their life cycles on Dec. 2.

On Dec. 21, AOS members provided stargazing and hands-on astronomy activities to visitors at the Clark Botanic Gardens Winter Wonderland Festival. This was a very well-attended event with many visitors enjoying the program.

Impromptu as well as planned public presentations or observing during the August 21st total solar eclipse were reported by several AOS members.

Nice going everyone!!

Thanks to all our volunteers!!

Volunteers are unpaid, not because they are worthless, but because they are priceless!

The Golden Rule of Astronomy:

"If you own a telescope, you have a moral obligation to share the view!" – John Dobson

Principia: The Mathematical Principles of Natural Philosophy-Sir Isaac Newton [Active Content] Kindle Edition at https://smile.amazon.com/gp/product/B011SFJSJO/ref=pe_2236880_250805440_em_1p_0_ti for $0.99

Jan 3: Earth at Perihelion-At 05:34 UTC on January 3, 2018, Earth will be at perihelion: the closest point to the Sun in its yearly orbit. The opposite happens in July when Earth reaches aphelion.

Notes from Our Observatories

AOS Observatory at Sagamore Hill National Park (Observatory West)-Dir George Saar

After meeting with the staff, it was decided to move our equipment and operations to Sagamore Hill.

Observatory East (Susan F. Rose Observatory) - Dir. Bill Crispino, Ass't Dir Joe Simon, Operator Alan Cousins Open to the public every clear Saturday night on the grounds of Custer Institute in Southold. Additional help is welcome**;** private observing can be made afterward. Contact Bill for equipment training.

Observing Projects for Month http://www.theskyscrapers.org/january
Measuring Light Polution https://www.globeatnight.org/ For December 9-18, Pegasus is the target. The winged horse will be overhead. See the charts and reporting requirements at https://www.globeatnight.org/magcharts/pegasus. Good news www.dpreview.com/news/0681877899/idaho-gets-the-first-international-dark-sky-reserve-in-the-united-states
Viewing the Lunar X & V Feb 22.
Meteor Showers Quadrantids-The radiant point is in the constellation Bootes, near the end of the Big Dipper's handle. Though low above the horizon early in the evening, the radiant will be at its highest elevation just before dawn. Look towards the northern horizon and scan to the zenith (directly overhead) early in the morning, just after midnight. The Quadrantids perform best between midnight and dawn. This shooting star display normally produces about 40 bright and fast (25.5 miles per second) meteors per hour at peak.
Super Blue Moon-There will be two supermoons: Jan 1 and Jan 31, 2018. Make sure you catch the January 31st supermoon, which is also a blue moon and will occur during a total lunar eclipse. This makes the Jan 16 new Moon a micro. Well, you can't see it anyway.

New SkyMapper Telescope creates the best map ever of the Southern skies-Steve Bellavia

This telescope is mapping the southern hemisphere, and filling the void from the loss of the Great Melbourne Telescope at the Mount Stromblo Observatory, after the 2003 Canberra brush fires. It also fills another void, in that the LSST, when it comes online, will be mapping a much dimmer realm of the Southern Sky, essentially "missing" stars and objects that are brighter than magnitude 16.
http://www.skyandtelescope.com/astronomy-news/explore-southern-sky-skymapper/
New Horizon's Next Target Might Have One or More Moons- https://www.space.com/39090-moon-spotted-orbiting-new-horizons-mu69.html
Cosmic Pursuits-Brian Ventrudo
The Sword of Orion region, which includes the famous Orion Nebula, was particularly beautiful framed with the upper limbs of some pine trees, so I took a snapshot of the region. Modern cameras are extremely sensitive, and I was able to capture a decent image in just a couple of seconds that gave an approximation of what I could see through binoculars. You can see the result at the link https://cosmicpursuits.com/1952/snapshot-of-the-orion-nebula/
On clear night last weekend, I drove out to darker skies to attend an outreach event to help beginners enjoy their first look through a telescope. Most could see brighter objects like the Orion Nebula or the colorful double star Almach. But anything fainter, and most struggled to see any detail at all. One faint smudge looked like all the others. Which reminded me again that looking through a telescope and seeing fine detail is an acquired skill. There are a number of strategies you can use to help work your way up the learning curve. To help you learn the skill yourself or teach it to others, I republished an old article on how to get the best visual experience when looking through a telescope. The article includes a short video excerpt and wise words from the excellent PBS documentary "Seeing in the Dark" by Timothy Ferris. https://cosmicpursuits.com/1949/how-to-look-through-a-telescope/
Pulsar J2032+4127 Update-https://www.nasa.gov/feature/goddard/astronomers-predict-fireworks-from-rare-stellar-encounter-in-2018 Now here is a series of updates https://fr.wikipedia.org/wiki/PSR_J2032%2B4127, https://arxiv.org/abs/1705.09653, http://tevcat.uchicago.edu/?mode=1;id=310

Internet Archive new books- If you're are interested in finding many lifetimes worth of books. The Internet Archive has just been up-dated a new down load of books and data sheets. You may find that one book you have been looking for. I found many astronomy, telescope and optics books. Some I had decades ago. Books from the U of C Berkeley science library have just been added. Some go back to 18th century!! It may be worth checking out. However, be aware there are now thousands on optics and astronomy. NASA just released their data tech reports, some you may find interesting. Internet Archive: Digital Library of Free Books, Movies, Music & Wayback Machine

Star Parties, Special Events, Conventions, etc.

April 4 Astronomy Day Cradle of Aviation Museum-AOS Outreach program
April 21-22 NEAF http://www.rocklandastronomy.com/neaf.html (imaging workshop prior 2 days)
June 14-17, 2018, May 30-June 2, 2019 June 18-21, 2020 Cherry Springs Star Party
www.astrohbg.org/CSSP/index.php/future-star-party-dates
June 23 Astronomy Festival National Mall 6-11 pm volunteers needed, contact Prof Lubowich
Aug 9-12 Stellafane Convention, VT http://stellafane.org/
Sept 7-9 Black Forest Star Party http://bfsp.org/
Oct 20 International Observe the Moon Night
Nov 3, 4, 5 Custer Institute Jamboree www.custerobservatroy.org see below
Nov 15-17 American Assoc of Variable Star Observers Annual Meeting www.aavso.org/aavso-meetings
July 11-14, 2018 ALCON, Minneapolis/St Paul, MN http://www.mnastro.org/
Amateur Astronomers Association, AAA www.aaa.org for calendar of upcoming events Jan 5- The APOD "Best Space Images of 2017 and All Time" lecture will be given by APOD editor Robert Nemiroff at the American Museum of Natural History (AMNH). This presentation is in the Kaufmann Theatre, 6:15-8:00 p.m. Please use the 77th Street entrance. Details can be found here: http://www.aaa.org/lectures/lecture-series-2017-2018/
Alley Pond Environmental Center (APEC) http://www.alleypond.com Monthly adult & family astronomy program “Star Searchers – Exploring the Night Sky” 7pm; $9 members / $15 non-members. Entrance at 228-06 Northern Blvd., Douglaston, NY
Columbia Astronomy Public Outreach http://outreach.astro.columbia.edu Observing following a talk
Cradle of Aviation Museum Cradle of Aviation Museum Sat and Sun at noon- a unique astronomy experience! Educator led, interactive, full dome, 40-50 min programs utilizes simulation software aimed at presenting and teaching astronomy, astrophysics and earth sciences. The full dome theater is a largescale immersive environment, featuring real time digital planetarium and large-format cine-ma. http://www.cradleofaviation.org. Astronomy Day is April 4.
Custer Institute & Observatory http://www.custerobservatory.org **Stargazing every clear Sat eve, 7-midnight** 631-765-2626
Montauk Observatory http://www.montaukobservatory.com/ Star Parties (weather permitting) Jan 19, Feb 9, Mar 16, 6-9pm South Fork Natural History Museum (www.SoFo.org) in Bridgehampton. Register at 631-537-9735. Thurs, Feb 1, 6:00 PM, East Hampton High School- Albert Einstein: Rock Star! Stephen Rosen is a physicist whose specialty is cosmic radiation and whose work has appeared in scientific journals and the national media. Please join us for his talk about Einstein, an iconic genius.
NYSkies Seminars 1st and 3rd Fri of each month. 6:30-9PM McBurney Hall, 125 W 14th St, 6/7 Ave, NYC www.nyskies.org/seminar.htm Join their hotline for local activities at nyskies@nyskies.org
SUNY@Stony Brook Science Open Nights - 7:30pm in Earth & Space Sciences Bldg, ESS 001. Astronomy Open Night www.astro.sunysb.edu/openight/opennite.html Next program is Feb 2
Sidewalk Astronomy in Lynbrook AOS member Tom Lynch
https://www.facebook.com/pages/Sidewalk-Astronomy-in-Lynbrook/133963613371631?ref=hl
Other Star Party lists http://earthsky.org/astronomy-essentials/astronomy-events-star-parties-festivals-workshops?utm_source=EarthSky+News&utm_campaign=7d79fa2dee-EarthSky_News&utm_medium=email&utm_term=0_c643945d79-7d79fa2dee-394585393

Mentoring Program To assist as a teacher, or if you are in need of some assistance, contact **Harvey Miller**.

Suggestion Box-Sue Rose There is a suggestion box at meetings, but you can always call or e-mail with ideas. We are only as good as our members make it and all thoughts are welcome.

Very exciting LSST, Telescope Mount Assembly (TMA), update!-Steve B
https://gallery.lsst.org/bp/#/folder/2689925/63456757

AOS Member AstroPhotos

It was just too cold and windy last night to do astrophotgraphy the "usual" way-Steve B

So, I tried something new: I used my little, inexpensive guide camera as the imaging camera, and didn't even bother with the guidescope or guiding. I polar aligned with the sight tube in the RA axis, and I didn't even put a finderscope on the telescope. It was nice having just one cable too. These little CMOS cameras are so sensitive, and have very low read noise. I have been seeing images posted, with very short exposures. You need many images to make up for the lost signal in each individual frame, but it makes imaging easier, as you don't need auto-guiding or precise polar alignment.

This is the camera: I took 558x10-second exposures and picked the best 360 of these (for a nice even hours' worth) and stacked them. This is the image, with object and photo information below): www.astrobin.com/327458/0/

Object Information: M1 (NGC 1952), The crab nebula, is a supernova remnant and pulsar wind nebula in the constellation Taurus, formed from a star that exploded in 1054 AD. This star was visible for 23 days in the daytime, shining 6 times as brightly as Venus, as reported by the Chinese as well as the Japanese, Arabic, and Native American stargazers. However, there is no report of this supernova from Europe, for unknown reasons.

The nebula lies in the Perseus Arm of the Milky Way galaxy, at a distance about 6,500 light years from Earth. It has a diameter of 11 light years, corresponding to an apparent diameter of some 7 arc-minutes, and is expanding at a rate of about 1,500 kilometers per second, or 0.5% of the speed of light.

At the center of the nebula lies the Crab Pulsar, a neutron star 28–30 km across with a spin rate of 30.2 times per second, which emits pulses of radiation from gamma rays to radio waves. The inner part of the nebula is a much smaller pulsar wind nebula that appears as a shell surrounding the pulsar. Some sources consider the Crab Nebula to be an example of both a pulsar wind nebula as well as a supernova remnant, while others separate the two phenomena based on the different sources of energy production and behavior.

Photo information: Mattituck, NY, December 27th, 2017, 8:30 PM to 11:55 PM EST Outside air temperature: 16 to 22 °F. Breezy, with many passing clouds, but clear in-between. Waxing quarter moon close by to target area. Seeing and Transparency both approximately 3 out of 5. Target started before meridian and finished after meridian, remaining very high the entire time in a good part of the sky, though the moon was bright and nearby. - Camera: ZWO ASI 224MC one shot color camera (non-cooled) (1304 x 976 square pixels 3.75-micron, 4.9 mm x 3.7 mm). - Scope: Stellarvue SV80ST, 80mm APO refractor with Stellarvue 0.8X reducer-corrector, yielding 384mm focal length and an image scale of 42 x 32 arc-minutes. - Mount: Celestron AVX. - No guidescope or guide camera used. - Total of 558, 10 second exposures, gain 300, offset 140 (lowest read noise setting from ASCOm driver presets). - 30 dark frames, no flat or bias frames

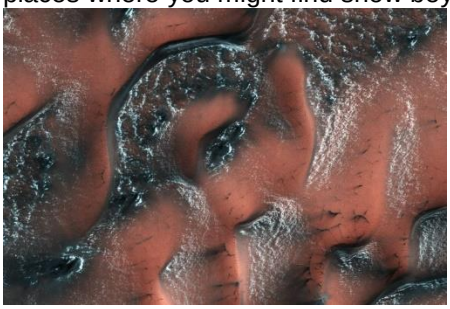
Of the 558 light frames, the best 360 were used. Software: Image Capture: AstroPhotography Tool (APT) 3.50

Image Processing and Stacking: Nebulosity 4.2. Used bi-linear debayering and standard deviation of 1.25 for stacking. Image Post-processing: Canon Digital Photo Professional and Gimp

This article is provided by NASA Space Place. 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!

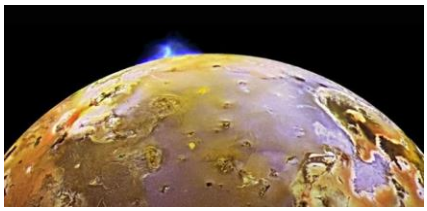
Snowy Worlds Beyond Earth-By Linda Hermans-Killiam

There are many places on Earth where it snows, but did you know it snows on other worlds, too? Here are just a few of the places where you might find snow beyond Earth:



Mars-The north pole and south pole of Mars have ice caps that grow and shrink with the seasons. These ice caps are made mainly of water ice—the same kind of ice you'd find on Earth. However, the snow that falls there is made of carbon dioxide—the same ingredient used to make dry ice here on Earth. Carbon dioxide is in the Martian atmosphere and it freezes and falls to the surface of the planet as snow. In 2017, NASA's Mars Reconnaissance Orbiter took photos of the sand dunes around Mars' north pole. The slopes of these dunes were covered with carbon dioxide snow and ice.

NASA's Mars Reconnaissance Orbiter captured this image of carbon dioxide snow covering dunes on Mars. Credit: NASA/JPL/U of Arizona



A Moon of Jupiter: Io-There are dozens of moons that orbit Jupiter and one of them, called Io, has snowflakes made out of sulfur. In 2001, NASA's Galileo spacecraft detected these sulfur snowflakes just above Io's south pole. The sulfur shoots into space from a volcano on Io's surface. In space, the sulfur quickly freezes to form snowflakes that fall back down to the surface.

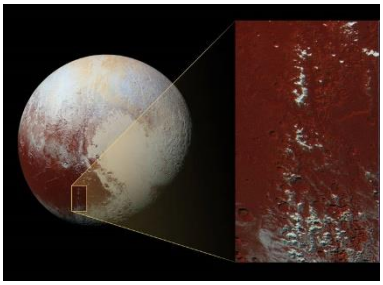
A volcano shooting molten sulfur out from the surface of Io. Credit: NASA/JPL-Caltech

A Moon of Saturn: Enceladus-Saturn's moon, Enceladus, has geysers that shoot water vapor out into space. There it freezes and falls back to the surface as snow. Some of the ice also escapes Enceladus to become part of Saturn's rings. The water vapor comes from a heated ocean which lies beneath the moon's icy surface. (Jupiter's moon Europa is also an icy world with a liquid ocean below the frozen surface.) All of this ice and snow make Enceladus one of the brightest objects in our solar system.

Enceladus as viewed from NASA's Cassini spacecraft. Credit: NASA

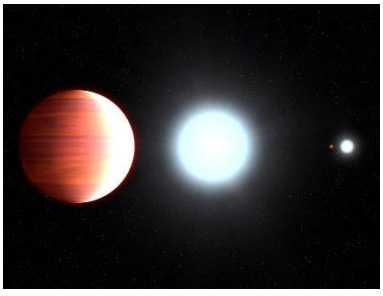
A Moon of Neptune: Triton-Neptune's largest moon is Triton. It has the coldest surface known in our solar system. Triton's atmosphere is made up mainly of nitrogen. This nitrogen freezes onto its surface covering Triton with ice made of frozen nitrogen. Triton also has geysers like Enceladus, though they are smaller and made of nitrogen rather than water.

The Voyager 2 mission captured this image of Triton. The black streaks are created by nitrogen geysers. Credit: NASA/JPL/USGS



Pluto-Farther out in our solar system lies the dwarf planet Pluto. In 2016, scientists on the New Horizons mission discovered a mountain chain on Pluto where the mountains were capped with methane snow and ice.

The snowy Cthulhu (pronounced kuh-THU-lu) mountain range on Pluto.
Credits: NASA/JHUAPL/SwRI



Beyond Our Solar System-There might even be snow far outside our solar system! Kepler-13Ab is a hot, giant planet, 1,730 light years from Earth. It's nine times more massive than Jupiter and it orbits very close to its star. The Hubble Space Telescope detected evidence of titanium oxide—the mineral used in sunscreen—in this planet's upper atmosphere. On the cooler side of Kepler-13Ab that faces away from its host star, the planet's strong gravity might cause the titanium oxide to fall down as "snow."

This is an artist's illustration of what Kepler-13Ab might look like. Credit: NASA/ESA/G. Bacon (STScI)

Want to learn more about weather on other planets? Check out NASA Space Place: https://spaceplace.nasa.gov/planet-weather

Websites to Explore

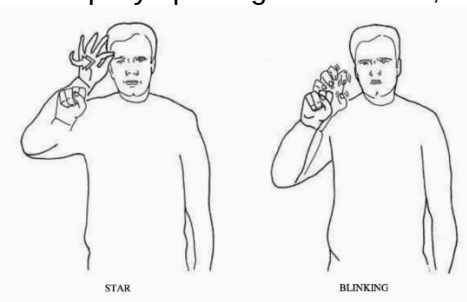
Planets Like Earth May Have Had Muddy Origins http://www.psi.edu/news/asteroidmud
Eyes Wide Open for MASCARA in Chile http://www.eso.org/public/news/eso1722/?lang
Amateur Observers Find an Asteroids Moon http://www.skyandtelescope.com/astronomy-news/amateur-observers-discover-asteroid-moon/
Moratorium on Mars Commands, Blame the Sun www.jpl.nasa.gov/news/news.php?feature=6895
Searching for other planets like ours https://spaceplace.nasa.gov/exoplanet-snap/en/
Asteroids: Overview: Ancient Space Rubble https://solarsystem.nasa.gov/planets/asteroids
Supersonic landfall http://www.esa.int/spaceinimages/Images/2017/07/Supersonic_parachute_testing
Dancing with Cassini http://blogs.esa.int/rocketscience/2017/07/15/ground-stations-go-dancing-with-cassini/
Rovers drive through Tenerife darkness http://www.esa.int/Our_Activities/Space_Engineering_Technology/Rovers_drive_through_Tenerife_darkness
Introducing Juice http://www.esa.int/spaceinimages/Images/2017/07/Exploring_Jupiter
Large, Distant Comets More Common Than Previously Thought www.jpl.nasa.gov/news/news.php?feature=6902
NASA's Hubble Sees Martian Moon Orbiting the Red Planet http://hubblesite.org/news_release/news/2017-29
Saturn surprises www.esa.int/Our_Activities/Space_Science/Highlights/Saturn_surprises
NASA Solves a Drizzle Riddle https://www.jpl.nasa.gov/news/news.php?feature=6903
Holograms Might Help Search for Alien Life https://www.jpl.nasa.gov/news/news.php?feature=6899
NASA Seeking BIG Ideas for Solar Power on Mars
https://www.nasa.gov/press-release/langley/nasa-seeking-big-ideas-for-solar-power-on-mars/
From Mars Rover: Panorama Above 'Perseverance Valley' www.jpl.nasa.gov/news/news.php?feature=6898
A Final Farewell to LISA Pathfinder https://www.jpl.nasa.gov/news/news.php?feature=6901
Why Does the Sun Burn Us? https://spaceplace.nasa.gov/sunburn/en/
A Tale of Three Stellar Cities http://www.eso.org/public/news/eso1723/?lang
Hubble Detects Exoplanet with Glowing Water Atmosphere
http://hubblesite.org/news_release/news/2017-31 www.jpl.nasa.gov/news/news.php?feature=6909
Eclipse Balloons to Study Effect of Mars-Like Environment on Life
https://www.jpl.nasa.gov/news/news.php?feature=6905
NASA's Voyager Spacecraft Still Reaching for the Stars After 40 Years
https://www.jpl.nasa.gov/news/news.php?feature=6907
First and Farthest: How the Voyagers Blazed Trails www.jpl.nasa.gov/news/news.php?feature=6908
Gravity waves detected in Sun's interior reveal rapidly rotating core
http://sci.esa.int/soho/59362-gravity-waves-detected-in-suns-interior-reveal-rapidly-rotating-core/
Asteroid Flyby Will Benefit NASA Detection and Tracking Network
www.jpl.nasa.gov/news/news.php?feature=6906
NASA Video: The Hunt for Asteroids https://science.nasa.gov/science-news/sciencecasts/the-hunt-for-asteroids
NASA scientists will chase solar eclipse in jets
http://www.cbc.ca/news/technology/nasa-scientist-solar-eclipse-fighter-jets-1.4221063
Breakthrough Starshot Takes to Space www.skyandtelescope.com/astronomy-news/breakthrough-starshot-takes-to-space
Five Years Ago and 154 Million Miles Away: Touchdown! www.jpl.nasa.gov/news/news.php?feature=6911
Docking replay http://www.esa.int/spaceinvideos/Videos/2017/07/Vita_docking
Welcome aboard http://www.esa.int/spaceinvideos/Videos/2017/07/Vita_hatch_opening
Extreme stellar factory www.esa.int/Our_Activities/Space_Science/Highlights/Extreme_stellar_factory
Latest issue: The Orbital Debris Quarterly News https://orbitaldebris.jsc.nasa.gov/quarterly-news/newsletter.html/
Back to the Lab http://www.esa.int/spaceinimages/Images/2017/03/Back_to_the_lab
Cassini Sees Heat Below the Icy Surface of Enceladus www.jpl.nasa.gov/news/news.php?feature=6775
Dark Matter Less Influential in Galaxies in Early Universe www.eso.org/public/news/eso1709/?lang

Hands in the Stars: The First International Comparative List of Astronomical Words in Sign Languages

By Dr. Michael West, Lowell Observatory's Deputy Director for Science

The International Astronomical Union, the largest organization of professional astronomers in the world, announced today that it has published a first comparative list of astronomical words in sign languages. "The signs presented in this list represent a collaboration between deaf communities, educators, and astronomers all over the world. The suggested signs are meant to engage the deaf community in scientific discussion." You can read the press release here: https://www.iau.org/news/pressreleases/detail/iau1706/ and you'll find the full English-language dictionary here: http://sion.frm.utn.edu.ar/iau-inclusion/wp-content/uploads/2017/11/Dictionary-english.pdf

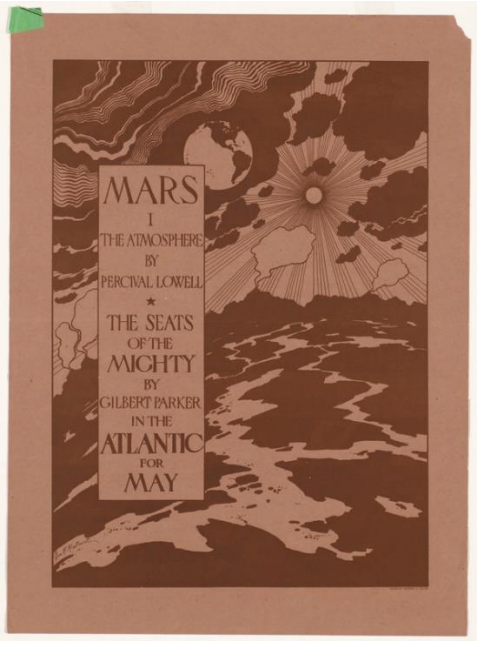
Here, for example, is the sign for 'pulsar,' which is a rapidly-spinning neutron star,



and here is the recommended sign for 'galaxy'

Making astronomy more accessible for hearing and visually impaired people, as well as people with other challenges, remains an important goal for the astronomical community, and publication of this new list is an important step forward.

Mars in the words of Percival Lowell By Dr. Michael West, Lowell Observatory's Deputy Director for Science



Percival Lowell not only built the observatory that bears his name, he was also one of the great science popularizers of his day. *The Atlantic* magazine, which was founded in 1857, has recently been highlighting some of Percival Lowell's contributions to that publication as part of its "160 Years of Atlantic Stories," including a four-part series that he wrote in 1895 about the possibility of life on Mars. Lowell's gift for words is evident from the first sentence: "Amid the seemingly countless stars that on a clear night spangle the vast dome overhead, there appeared last autumn to be a new-comer, a very large and ruddy one, that rose at sunset through the haze about the horizon." If you'd like to read more, you'll find the first part here: www.theatlantic.com/magazine/archive/1895/05/mars-part-i/305483/ which includes links to the other parts in the series.