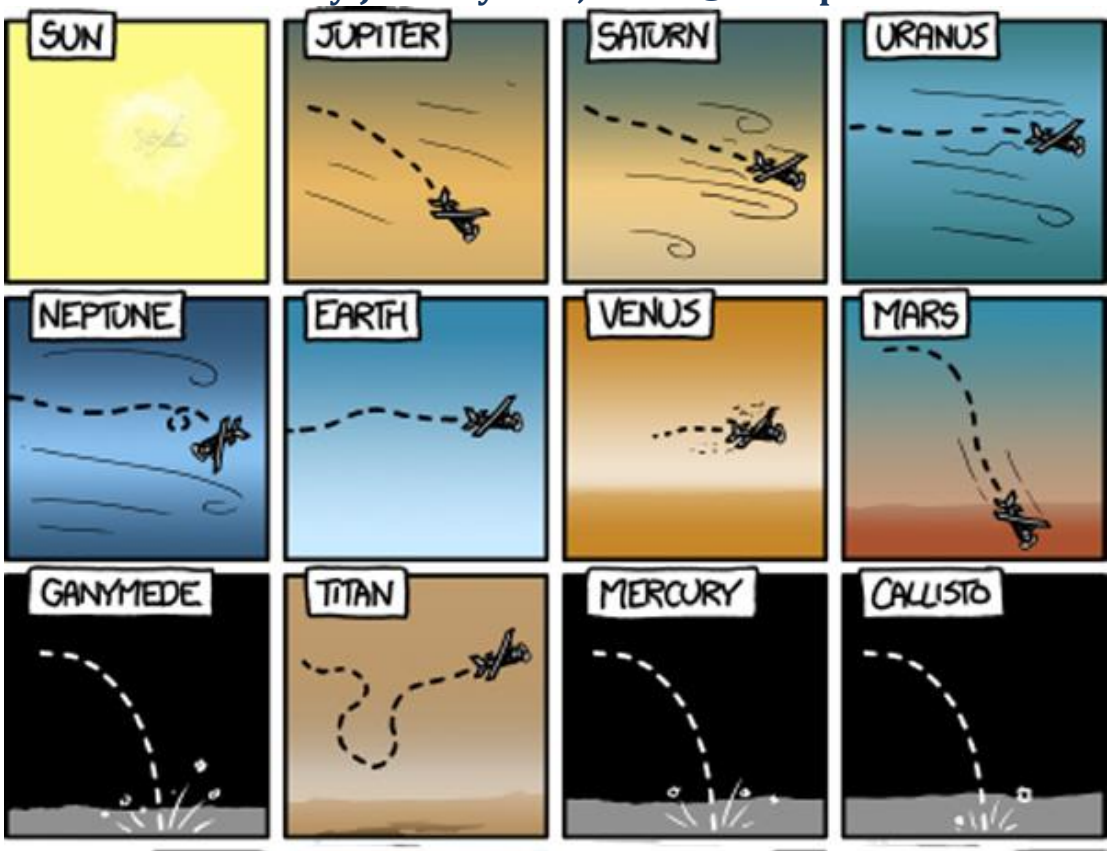
Observer

January

EVANSVILLE ASTRONOMICAL SOCIETY, INC. 2018

January Meeting at the Museum

Friday January 19th, 2018 @ 7:30pm



NASA's New Frontiersmen – Dragonfly
Could provide groundbreaking science of flying drones on a frozen waterworld…but Randall Munroe, a NASA programmer-cum-XKCD webcomic, may soon be able to fly his Cessna there. Article Continued on Page 5

Inside this Issue..

The EAS newsletter, Observer, is published monthly. Anyone wishing to contribute articles or photos may mail them to the club's PO Box: EAS, PO Box 3474, Evansville, IN 47733, or e-mail them to the editor at: dasiceman@yahoo.com

The **Evansville Astronomical Society** (EAS) is a non-profit organization fully incorporated in the state of Indiana. It has, as its primary goal, the advancement of amateur astronomy. Founded in 1952, the society seeks to:

1… maintain adequate facilities for its members and the public in order to extensively study the skies and
2… promote an educational program for those who wish to learn more about the science of Astronomy.

Meetings are held the third Friday of each month, except June, when the annual EAS picnic is held. The society also sponsors monthly Open House events during the warmer seasons that afford the public an opportunity to tour the observatory.

EAS 2018 Officers and Contacts

President – Tony Bryan
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evansvilleastro@gmail.com

Vice President – Scott Conner

Secretary – David M Kube
740.223.6854

Treasurer – Ted Ubelhor

Counselors
Ken Harris
Mitch Luman
Michael Borman

Webmaster – Michael Borman

Program Director
Tony Bryan

Newsletter editor – Dave Kube
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For more information about the EAS or directions to the Observatory, please visit the club's web page:
www.evansvilleastro.org

Local Events and Information

EAS Schedule Update:

Please Note we have a Regular scheduled meeting on Friday, January 19th, 2018 @ Museum @ 7:30 pm.

EAS Update:

Please Note we have a Regular scheduled meeting on Friday, February 16th, 2018 @ Museum @ 7:30 pm.

EAS Update:

Please Note – The EAS Board members are diligently working on the event schedule for the upcoming 2018 year.

EAS Update:

Please Note.

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Please Note.

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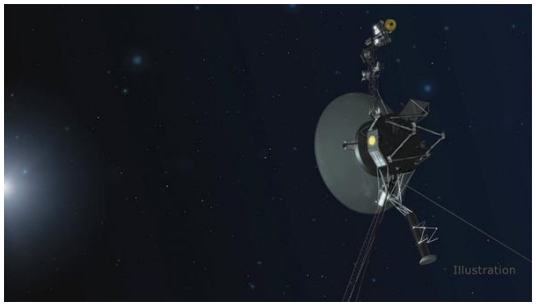
Please Note.

Telescopes and accessories for sale…

As mentioned in last month's issue, Mike Borman still has some excellent telescope equipment and imaging accessories for sale. Some of the gear has already been sold. If interested, go to Mike's web page. Here is the link: http://www.mborman.org/forsale.htm

Voyager 1 Fires Dormant Thrusters for the First Time in 37 Years.



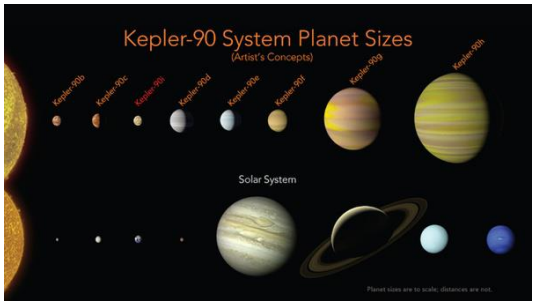
Going bravely where no spacecraft has gone before. NASA/JPL-Caltech

Man, they just don't build 'em like they used to. The Voyager 1 spacecraft, launched in 1977, has fired up a pair of thrusters that haven't been used for 37 years.

The set of four small thrusters came online Wednesday after NASA engineers noticed the spacecraft's attitude control thrusters had been degrading for several years. Voyager also has another similar set, called trajectory control maneuver thrusters, that were used in the years after its launch to guide the craft around the various planets on the way out of the solar system.

Past Saturn, though, those thrusters were no longer needed and they went cold. Now, almost four decades later, they've come back to life without a hitch to take over for the failing attitude control thrusters. Using the thrusters will take some extra energy, a precious commodity for the aging spacecraft, but NASA says the maneuver will add a few years to the mission's life.

Third rock from the star Kepler-90.



Kepler-90i, a recently discovered exoplanet (labeled in red) found using Google AI technology, is part of a system with a very similar configuration to our solar system, where small planets lie near the star and larger planets are found further away. NASA/Ames Research Center/Wendy Stenzel

It's official: the Sun is no longer the only star with eight planets.

In a joint teleconference today, NASA and Google announced the recent discovery of an eighth planet orbiting the Sun-like star Kepler-90, located some 2,500 light-years from Earth. The newly discovered exoplanet, named Kepler-90i, is a rocky world with a surface temperature of roughly 800°F (426°C) that zooms around its host star once every 14.4 days.

The discovery of Kepler-90i (as well as the discovery of another exoplanet known as Kepler-80g) was made using the first neural network — developed by Google — designed to analyze archival data from the Kepler Space Telescope.

"A neural network is a machine learning algorithm that is very loosely inspired by the human brain," said Christopher Shallue, senior software engineer at Google AI and co-author of the study.

The LSST and big data science.

I A depiction of what the completed LSST observatory will look like atop El Peñon summit, Chile. LSST Project/NSF/AURA

Construction of the Large Synoptic Survey Telescope (LSST) in Chile is about halfway between first brick and first light. Its 3-ton camera, built with National Science Foundation support, will be the largest digital instrument ever built for ground-based astronomy and will take pictures fast enough to capture the entire southern sky every three nights. According to a TED talk by Andy Connolly, Professor of Astronomy at the University of Washington and Team Lead for LSST Simulations, the Hubble Space Telescope would need 120 years to image an equivalent area of sky.

Imaging at this rate will generate about 15 terabytes (15 trillion bytes) of raw data per night and 30 petabytes over its 10-year survey life. (A petabyte is approximately the amount of data in 200,000 movie-length DVDs.) Even after processing, that's still a 15 PB (15,000 TB) store.

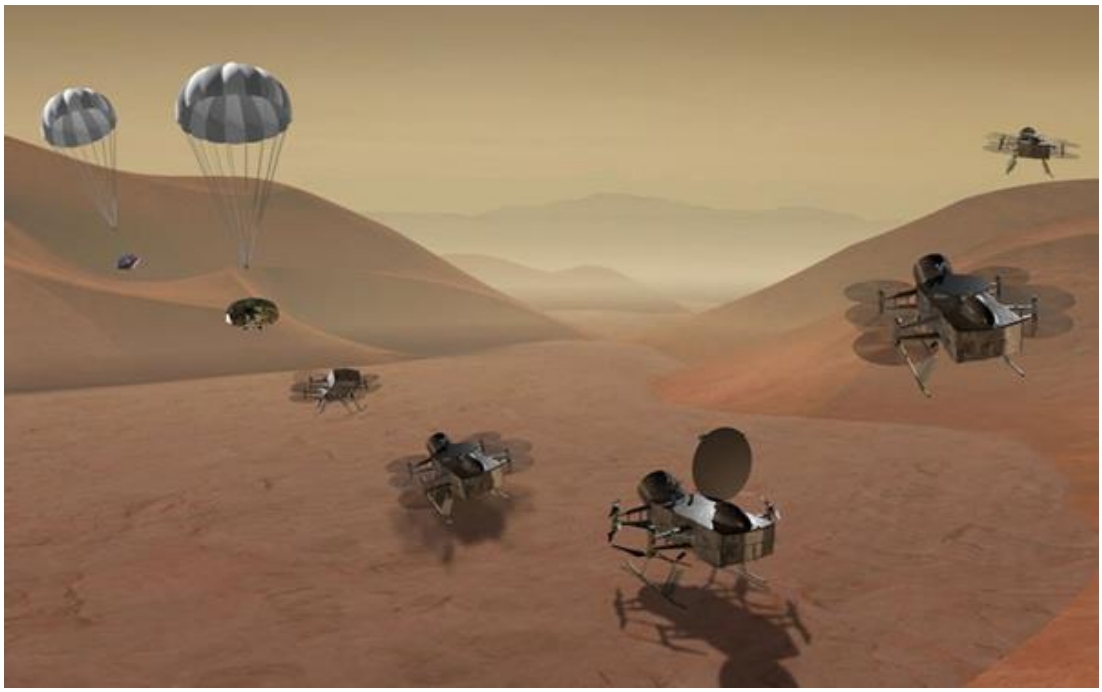
February 2018

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16 Reg. Mtg 7:30pm Museum	17
18	19	20	21	22	23	24
25	26	27	28			

Up and Coming Events 2017/2018
Regular Meeting – Friday January 19th – Museum @ 7:30 pm
Regular Meeting – Friday February 16th – Museum @ 7:30 pm

Moon Phases			
New Moon	**First Quarter**	**Full Moon**	**Third Quarter**
February 15th, 2018	**February 23rd, 2018**	**March 1st, 2018**	**February 7th, 2018**
Moon Phases courtesey of Time and Date.com			

NASA's New Frontiersmen cont.



Dragonfly is a dual-quadcopter lander that would take advantage of the environment on Titan to fly to multiple locations, some hundreds of miles apart – NASA

A little over once a decade, through its New Frontiers program, NASA hosts a battle-royale lottery that sets the tone for the agency's focus on the future of exploration throughout the solar system. This year, in terms of planetary exploration, NASA decided on sending drones to Titan and a claw-machine to a familiar asteroid.

NASA's missions are largely split into three camps: the inexpensive missions, a wide assortment of $600- to $700-million missions like the Discovery endeavors, and then there are Flagship missions that set the agency back a cool $2 billion, which launch around every decade or so. The New Frontiers program is somewhere in between; it's sort of an engineering Hunger Games for space exploration.

NASA accepted twelve mission proposals comprising six themes: comet surface sample return, lunar south pole-Aitken Basin sample return, ocean worlds (e.g., Saturn's moons Titan and Enceladus), Saturn probe, Trojan asteroid tour and rendezvous and Venus in situ explorer. They whittled these proposals down to two, through an extensive peer review process. These missions will proceed into Phase A development, after which, one will be selected for flight in July 2019, to launch by 2025.

The two missions selected, the Comet Astrobiology Exploration Sample Return (CAESAR) and Dragonfly, would see NASA return to old stomping grounds, but with new technology.

CAESAR, led by principal investigator Steve Squyres, proposes a return to 67P/Churyumov-Gerasimenko, a comet previously explored by the European Space Agency's Rosetta spacecraft. CAESAR will return its sample to Earth 14 years after launch.

Dragonfly, the second finalist, would set sail to Titan. Indeed, Titan is rich with complex hydrocarbons and water beneath its frozen shell, richly detailed by Cassini. The probe itself, a rotocraft, would spend most of its time collecting samples on the ground, studying Titan's habitability by determining how far prebiotic chemistry has progressed. Dragonfly would be able to fly hundreds of kilometers at a time to make measurements in different geologic settings. Indeed, the combination of a dense atmosphere and the low gravity means that it is easier to fly on Titan than on Earth - with wings a person could even fly on Titan!

EAS MEETING Minutes for December 15th, 2017

CHRISTMAS POTLUCK – Prior to the meeting all enjoyed a variety of treats for our Christmas Pot Luck.

The meeting was called to order at 8:06 pm by President Tony Bryan. There were 19 members present. The reading of the minutes was motioned to be accepted as published in the newsletter and seconded. The motion passed by majority vote.

UPCOMING EAS EVENTS – V. President Scott Conner announced the below list of up-coming events.

EAS Meeting	**Friday, January 19**	**7:30 pm @ Evansville Museum**
EAS Meeting	**Friday, February 16**	**7:30 pm @ Evansville Museum**

TREASURER'S REPORT – Treasurer Ted Ubelhor reported that we now have 45 paid members. Ted, also reports, that we have funds in our accounts.

SPECIAL PROJECTS

Scott Conner reported no change in preparation of the installation of the Astro-Tech AT8RC. Tony Bryan reported that we need to get the roof repairs completed before we can consider further progress on the Storage Room. Tony Bryan reports that we currently remodeling the Women's Restroom. Tony also reports that the refrigerator is in need of a replacement. He would like to see if anyone has one that could be donated or if they may know of someone that does.

OLD BUSINESS

PSW #7 – was held on Saturday, November 18th. Tony received an email from Samantha Brand that read as follows: *I just wanted to say thank you again for having us this last Saturday for my son's birthday party. The boys and adults both enjoyed it so much! Everyone talked about how interesting it was and that they all learned something. We look forward to visiting again sometime!*
Ken Harris reported that there were 18 guest and presented an intro program followed by an observing session.

Questar Proposal Update – Mitch and Dan introduce the Questar to us as it was set up in front of the theater including mount. Tony Bryan reported that negotiations for the skypod would continue after the 1st of the year.

NEW BUSINESS

Introduction of EAS Officers for 2018 - The EAS officers for 2108 is as follows: President-Tony Bryan, Vice President – Scott Conner, Treasurer – Ted Ubelhor, Secretary – Dave Kube. The counselors are: Ken Harris (in his 3rd year), Mitch Luman (in his 2nd year), and Mike Borman (now in his 1st year).

January Meeting and Presentation - Our January meeting will take place at the Museum in Evansville. Mike Borman is scheduled to be our presenter that evening.

Planning Session – The officers will soon be setting a date for our 2018 Planning Session.

ANNOUNCEMENTS

2018 Texas Star Party – The 40th Annual TEXAS STAR PARTY will be May 6-13, 2018. If you intend to go you must first submit a Registration/Reservation Request Form before January 19, 2018. This will put you in the lottery for a chance of being selected as one of the 500 people to attend. The link for registration is http://texasstarparty.org/get-started/

Next Monthly Meeting - Our next regular meeting is scheduled for 7:30 PM on January 19th at the Evansville Museum.

December Meeting Presentation – As in previous years the December meeting will be our annual Christmas Astronomy Quiz. This year the quiz will be presented by Scott Conner.

Meeting was adjourned at 8:22pm