The Astronews

HUI KILOLANI

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www.hawastsoc.org

2016 CALENDARS Available!!!!

The "Deep Space Mysteries" calendar presented by Astronomy Magazine, extra large size: 13" by 23' open, is filled with stunning images of stars, planets, galaxies, and other deep space wonders, with highly informative essays ac-companying each photograph. They are available at a discount through our club for only $6.50!

I (April Lew) will be accepting orders for the 2016 calendars: $6.50 each, cash or check, at the November HAS meeting, or mail your order with check made out to "Hawaii Astronomical Society" To: Hawaii Astronomical Society, P.O. Box 17671, Honolulu, HI 96817.

Solstice Potluck!!!!

We are approaching the time of the winter solstice. It is our solemn duty to make the December 1 potluck (to be held prior to the club meeting, about 6:00 PM to 6:30 PM until the start of the meeting at 7:30 PM) as lively as we can manage. Why you may well ask? For millennia it has been a well established fact that the days grow shorter before the winter solstice. Because this

Inside this issue:

Upcoming Events:

The next meeting is on Tuesday, Nov. 3rd at the Bishop Museum 7:30 PM.

- Bishop Museum's planetarium shows are every Saturday of the month at 8:00 PM www.bishopmuseum.org/calendar
- The next Board meeting is Sun., Nov. 1 at 3:30 PM in POST building at UH.

President's Message
November 2015

In the history of astronomy as well as for most amateur astronomers of any time, the Moon has been one of the first objects of interest, and one that is frequently revisited. Its relative proximity provides more detailed views than does any other celestial target, and its constantly changing phase means we almost never observe it under exactly the same conditions. It's even possible to watch the Sun rise or set on parts of the Moon during a single observing session.

The Moon isn't only an object to observe, though. It can also be a platform from which astronomical observation of other objects can be undertaken. Earth's Moon has several attributes that make it a desirable location for astronomy.

The lack of atmosphere makes it possible to observe in any part of the sky, all the way down to the horizon, with no distortion. Daytime observation is even quite feasible with a little extra shielding to block light reflected from surface features. The slow lunar rotation would allow for very long integration times when imaging faint objects. Cold temperatures would make it easier to avoid thermal noise during infrared observation. Lower gravity would allow for the construction of larger structures than on Earth.

The far side of the Moon is the only place in our solar system that is constantly shielded from radio waves generated on Earth. Radio astronomy on the far side could take advantage of the bowl shape of craters up to 10 kilometers or so in diameter to build very large Arecibo-style radio telescopes.

According to the BBC, Russia and Europe are collaborating on a series of robotic missions to the Moon that will commence with Luna 27 in 2020. This

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Observer's Notebook—November 2015 by Jay Wrathall

Planets Close To the Moon
Times are Hawaii Standard Time

Nov 6, 05h, M 2.1° SSW of Jupiter
(56° from sun in morning sky)
Nov 6, 21h, M 1.9° SW of Mars
(48° from sun in morning sky)
Nov 7, 03h, M 1.2° SSW of Venus
(46° from Sun in morning sky)
Nov 12, 05h, M 3.0° N of Saturn
(15° from sun in evening sky)
Nov 19, 15h, M 2.7° NNW of Neptune
(100° from sun in evening sky)
Nov 21, 23h, M 1.41° ESE of Uranus
(137° from sun in evening sky)

Mercury is closer than 15° from the sun when near the moon in November.

Other Events of Interest
Times are Hawaii Standard Time

Nov 1, First Sunday in November. On mainland,
clocks change to standard time.
Nov 2, 22h, Venus 0,68° SSW of Mars
(46° from sun in morning sky)
Nov 11, 0747h, New Moon
Nov 17, 05h, Mercury at superior conj. with sun
(Passes into evening sky.)
Nov 18, Leonid Meteors.
Nov 25, 12:44h, Full Moon
Nov 26, 00h, Moon 0.65° NNW of Aldebaran
(172° from sun in midnight sky)
Nov 29, 14h, Saturn at conjunction with sun
(Passes into morning sky)

Planets in November

Mercury
is too close to the sun to be observed in November.

Venus
shines brightly in the morning sky, at about magnitude -4.3.

Mars
is just above Venus in the morning sky, but much dimmer.

Jupiter
is visible in the morning sky, higher than Venus and Mars.

Saturn
becomes lost in the glare of the sun in November, reaching conjunction with the sun on Nov 30. .

Uranus
reached opposition last month, so will be in the sky most of the night. Best observed in late evening before midnight.

Neptune
is visible in the southwest after sunset.

15-Eunomia (Asteroid)
reached opposition last month at magnitude +7.9. This is one of the brightest asteroids after the first four.

Pluto (Dwarf Planet)
can be viewed after sunset low in the sky in Sagattarius

Meeting Minutes

H.A.S. Secretary

President Chris Peterson called the October 6, 2015 meeting of the Hawaiian Astronomical Society to order at 7:32 p.m. The meeting was held in Planetarium, on the grounds of the Bishop Museum, Honolulu, Hawaii. There were nineteen members in attendance.

SOEST Open House - Chris informed members that this year's SOEST Open House will take place on Friday, October 23 and Saturday, October 24, 2015. He suggested that adults might enjoy the Saturday Open House due to a smaller population of students crowding the halls.

Satellite Launch – The students of the Hawaii Space Flight Laboratory are excitedly looking forward to the launch of their experiments in a rocket that will blast off from Kauai's Barking Sands testing range. H.A.S. president Chris Peterson will journey to Kauai to view the launch. There was discussion of the payload and experiments that will make their way into space. Additional discussions touched on the growing number of manmade satellites orbiting Earth, the proximity of those satellites to one another, and how to negate the effects of space trash that may be created should any of them collide.

Lacy Veach Day of Discovery – The upcoming annual Lacy Veach Day of Discovery at Punahou School will take place during October 31, 2015. Gretchen West wanted to thank those who signed up in advance. It is a fun day to share with parents, students, and educators.

Star Party Report – During the month of October we have one school star party scheduled.

Oct. 16 – American Renaissance Academy at Barber's Point.

4-6 astronomers are needed.

Our urban viewing events at community parks have been well attended. At the most recent Kahala star party a large group of students from McKinley High School came to learn more about the skies over Hawaii. That same evening, the astronomers at Geiger Community Park hosted approximately fifteen Girl Scouts. This last month's public star party had H.A.S. hosting a group of fifty students and faculty from Hawaii Pacific University.

Observing Calendar- Next year's observing schedule is being finalized and will be published in the November ASTRONEWS.

Pot Luck- We would like to let all members know that we will have a Christmas potluck supper prior to the December meeting on December 1, 2015 in the hall adjacent to the Planetarium. Sign up now with April Lew.

Elections – Joanne Bogan has accepted the responsibility of chairing this year's H.A.S. elections. Anyone interested in running for office please

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NOVEMBER

SUNDAY

Nov-15

FIRST DAY OF WEEK

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01 sunset 17:55	02 8:00 PM Globe at Night	03 8:00 PM Globe at Night 7:30 PM Club Meeting	04 8:00 PM Globe at Night	05 8:00 PM Globe at Night	06 8:00 PM Globe at Night	07 8:00 PM Globe at Night 5:45 PM Club Star Party(D) (Private)
08 8:00 PM Globe at Night sunset 17:52	09 8:00 PM Globe at Night	10 8:00 PM Globe at Night	11 8:00 PM Globe at Night	12	13	14 5:30 PM Public Star Party(D)
15 sunset 17:50	16	17	18	19	20	21 5:30 PM Public Star Party(G) 5:30 PM Public Star Party(K)
22 sunset 17:48	23	24	25	26	27	28
29 sunset 17:48	30	01	02	03	04	05

☐☐Upcoming Star Parties☐☐

Public Party-Dillingham Nov. 14 (C. Rykken)
Public Party Geiger Nov. 21
Public Party Kahala Nov. 21

Upcoming School Star Parties

		No School Star Parties for November

(Continued from page 4 Meeting Minutes)

contact any of the H.A.S. Board members listed in the Astronews.

Changes at Bishop Museum – Free parking at the Bishop Museum may be coming to an end. Don't be surprised if you are asked to pay $5 to park at the museum. Word has it that Museum members may not have to pay. The management will be making other changes. Holiday closures at Bishop Museum will include Thanksgiving and Christmas. Check it out.

Planetarium Shows - The Planetarium has a laser system for three months and will be showing some different and blazing shows. You might want to stop in and enjoy!

FYI – Steve Chun is selling his 8" Meade LX 250R. Price = $1,200. It has been upgraded and he is looking for a caring member to adopt (buy) the scope. It is nine years old.

October Speaker – This month's speaker was Brian Shiro, a geophysicist and NASA hopeful and astronaut-in-waiting. Brian spoke to the members assembled about the qualifications astronauts need to have to make it into space. Through an interesting and well-constructed power point presentation, we learned more about the vetting process for astronaut trainees. Needless to say, astronaut trainees need to be inspired, adjustable, and healthy, have diverse interests, experiences and capabilities. They must have compassion, be resourceful, and be good communicators. This thumbnail overview doesn't do Brian's talk justice. You just had to be there.

The Planetarium – The Hawaiian Astronomical Society is fortunate that the Bishop Museum allows us to use their facilities for our monthly meetings. We also should take our hats off to thank our friend and fellow member Joanne Bogan, who shares a pretty special view of the night skies over Hawaii with us. This month, Joanne treated us to one or two snippets of the laser shows that others have to pay for. Aren't we lucky?

Mahalo – As there was no further business, the meeting was adjourned at 9:32 p.m. Very tasty refreshments were served in the rotunda.

Respectfully Submitted,

Gretchen West

H.A.S. Secretary

How we know Mars has liquid water on its surface

By Dr. Ethan Siegel

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Of all the planets in the solar system other than our own, Mars is the one place with the most Earth-like past. Geological features on the surface such as dried up riverbeds, sedimentary patterns, mineral spherules nicknamed "blueberries," and evidence of liquid-based erosion all tell the same story: that of a wet, watery past. But although we've found plenty of evidence for molecular water on Mars in the solid (ice) and gaseous (vapor) states, including in icecaps, clouds and subsurface ices exposed (and sublimated) by digging, that in no way meant there'd be water in its liquid phase today.

Sure, water flowed on the surface of Mars during the first billion years of the solar system, perhaps producing an ocean a mile deep, though the ocean presence is still much debated. Given that life on Earth took hold well within that time, it’s conceivable that Mars was once a rich, living planet as well. But unlike Earth, Mars is small: small enough that its interior cooled and lost its protective magnetic field, enabling the sun's solar wind to strip its atmosphere away. Without a significant atmosphere, the liquid phase of water became a virtual impossibility, and Mars became the arid world we know it to be today.

But certain ions—potassium, calcium, sodium, magnesium, chloride and fluoride, among others—get left behind when the liquid water disappears, leaving a “salt” residue of mineral salts (that may include table salt, sodium chloride) on the surface. While pure liquid water may not persist at standard Martian pressures and temperatures, extremely salty, briny water can indeed stay in a liquid state for extended periods under the conditions on the Red Planet. It's more of a "sandy crust" like you'd experience on the shore when the tide goes out than the flowing waters we're used to in rivers on Earth, but it means that under the right temperature conditions, liquid water does exist on Mars today, at least in small amounts.

The measured presence and concentration of these salts, found in the dark streaks that come and go on steep crater walls, combined with our knowledge of how water behaves under certain physical and chemical conditions and the observations of changing features on the Martian surface supports the idea that this is the action of liquid water. Short of taking a sample and analyzing it in situ on Mars, this is the best current

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Meteor Log—November 2015

by Tom Giguere

If you're planning to observe the November Leonids, which is the strongest shower this month, you will want to head out to observe on Nov 17th. November's waxing crescent Moon, at first quarter on the 19th, provides perfect observing conditions for this date. The Leonid radiant becomes usefully-observable by local midnight or so north of the equator.

A friend at work sent me the picture shown below – I was intrigued. I don't think you can pack any more information into a single astro picture … well, a nice meteor would have finished it off nicely! See if you can recognize all of the features that the author (Klaus Schmidt) describes.

"Is there anything interesting to see in the direction opposite the Sun? One night last month, there were quite a few things. First, the red-glowing orb on

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First Quarter	Full Moon	Last Quarter	New Moon
November 19	November 25	November 3	November 11

Shower	Activity	Maximum		Radiant		V_∞	*r*	ZHR
		Date	$\lambda_\odot$	α	δ	km/s		
Northern Taurids (NTA)*	10/6→10/10	(Oct 08)	195.4°	262°	+54°	20	2.6	Var
Leonids (LEO)*	9/10→11/20	(Oct 10)	197°	32°	+09°	27	2.3	5
α-Monocerotids (AMO)	10/10→10/18	(Oct 11)	198°	84°	+44°	64	3.0	2

*May have multiple peaks

If you spot one… call it in!. For more info: Thomas Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Treasurer's Report

by April Lew

HAS Financial Report September 16 October 15 2015			
Beginning Balance			1814.23
Income:			
	Dues Received	122.00	
Total Income			122 .00
Expenses:			
	October Astronews printing & mailing	124.55	
Total Expenses			124.55
Ending Balance			1811.68

. We welcome two new members this month. They are ***Randy and Kathleen Knopf***.

. Many thanks to those renewing their membership (Robert Humphreys, Otis Wickman, Kimberly & Hieu Nguyen and Gina Ho). As a reminder, please check your membership anniversary date listed on the Astronews address label. Clear skies to all!

(Continued from page 8) Meteor Log

the lower right of the featured image is the full moon, darkened and reddened because it has entered Earth's shadow. Beyond Earth's cone of darkness are backscattering dust particles orbiting the Sun that standout with a diffuse glow called the gegenschein, visible as a faint band rising from the central horizon and passing behind the Moon. A nearly horizontal stripe of green airglow is also discernable just above the horizon, partly blocked by blowing orange sand."

"Visible in the distant sky as the blue dot near the top of the image is the star Sirius, while the central band of our Milky Way Galaxy arches up on the image left and down again on the right. The fuzzy light patches just left of center are the Large and Small Magellanic Clouds. Red emission nebulas too numerous to mention are scattered about the sky, but are labelled in a companion annotated image. In the image foreground is the desolate Deadvlei region of the Namib-Naukluft National Park in Namibia, featuring the astrophotographer himself surveying a land and sky so amazing that he described it as one of the top experiences of his life."

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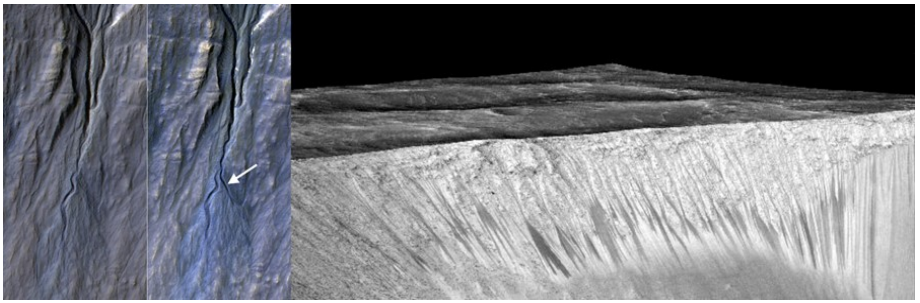
(Space Place Continued from page 7)
evidence we have for liquid water on our red neighbor. Next up? Finding out if there are any single-celled organisms hardy enough to survive and thrive under those conditions, possibly even native to Mars itself!



Images credit: NASA/JPL-Caltech/Univ. of Arizona, of a newly-formed gully on the Martian surface (L) and of the series of gullies where the salt deposits were found (R).

(Continued from page 9) Meteor Log

Image Credit & Copyright: Petr Horálek; Rollover Annotation: Judy Schmidt

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dying out of the light of life, we really must have as happy a time as we can muster to bring old Sol back from a perilously permanent slumber. Much in the spirit of the wake when a person travels onto the great beyond, it is an old tradition hoary with age to show there is plenty of life for old sol to stick around and join the party.

If you have any ideas on how we might make things a bit more more lively, please let me (Charlie Rykken) or April Lew know of your ideas. The food itself is certainly celebration enough and any group activities are purely optional. Let your imagination go supernova with creative ideas. One of the things that make going to something like this potluck special is to share the holiday cheer.

The Apollo 17 crew caught this breathtaking view of our home planet as they were traveling to the Moon in 1972. It's the first time astronauts were able to photograph the South polar ice cap. Nearly the entire coastline of Africa is clearly visible, along with the Arabian Peninsula.

Image Credit: NASA

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Phobos: Doomed Moon of Mars

Credit: HiRISE, MRO, LPL (U. Arizona), NASA