The
Astronews

HUI KILOLANI

Volume 60, Issue 1

January 2012

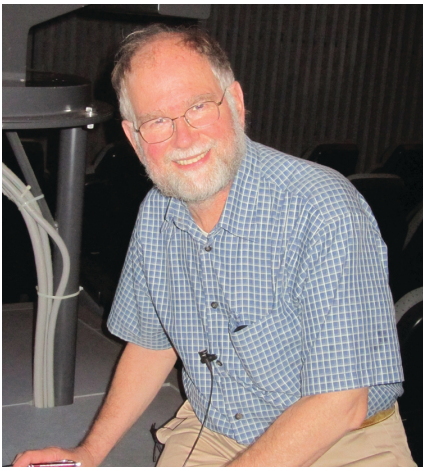
www.hawastsoc.org

GUEST SPEAKER
January 3rd Meeting:

Michael Shanahan

Bishop Museum

"50 Years of the Bishop Museum Planetarium"



~Special Thanks~
Dr. Richard Keen
University of Colorado
Dept. of Atmospheric & Oceanic Sciences

Dr. Keen gave a fascinating talk on lunar eclipses at our last club meeting and met with club members at our holiday pot luck earlier in the evening.
We were fortunate that Dr. Keen has relatives on the island and could schedule his talk around his visit.
See report in Minutes on pg 11 and images on pg 9.

Inside this issue:

Upcoming Events:

☆The next meeting is 7:30PM on **Tues., Jan 3** at the Bishop Museum Planetarium.

☆Bishop Museum's next planetarium shows with **Barry Peckham** are Friday, **Jan 6 & 20** at 8:00 p.m.
www.bishopmuseum.org/calendar

☆The next Board Meeting is Mon., **Jan 2** at 3:30 p.m. at the POST building at UH.

Up To The Minute:

In this issue:

☆**New Board Election Results** - In the Minutes Report beginning on page 3. Welcome to the new members of our voluntary board!

☆**New Astronews contributor** - New member Charles Rykken is taking a stab at contributing an article for the newsletter. Remember, this is your club (thus your newsletter) so whatever you want to contribute within the guidelines of the club policies is gladly welcome.

The Hawaiian Astronomical Society is now on facebook

NSN News

The Night Sky Network (NSN) has paired up with Earthsky to provide daily sky charts. You do not need to be a members of the NSN to use this link. Just click on this link: http://earthsky.org/tonight.

In addition, the NSN is providing another link for getting information about the night sky such as sunrise,sunset, moonrise, moonset, eclipses, and moon phase for your location.

When you get to the web page, there is additional information you can access in the right column. The weather forecast is okay. The Sky Chart provides a chart for Zero, 35, and 40 degrees latitude. Lots of additional information is also provided.

You do not need to be a member of the NSN to use this link: ***http://nightsky.jpl.nasa.gov/planner.cfm.***

Happy star gazing...

Clear Nights,
John G.

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The Astronews is a monthly newsletter of the Hawaiian Astronomical Society. Some of the contents may be copyrighted. We request that authors and artists be given credit for their work. Contributions are welcome. Send them to the Editor via email. The deadline is the 16th of each month. We are not responsible for unsolicited artwork.

President's Message

by Chris Peterson

A new year always brings the promise of new possibilities. 2012 brings a number of astronomical observing opportunities. Some are common while others are quite rare. One of the rare events will be the transit of Venus across the face of the Sun on June 5th (Hawaii time). The next one won't be for 105 years. We're well placed to view this event, unlike the previous one eight years earlier.

Mars at opposition is a much more frequent occurance, but still noteworthy since we only get a few weeks of good viewing opportunities every two years or so. Mars comes to opposition on March 3rd as we are losing Jupiter as a good evening target. This will be the "worst" opposition of this cycle, marginally more distant than the last one, with Mars only reaching 14" in apparent size. Still, it will reveal details on its surface for a few weeks.

By the time Mars loses too much size, Saturn will be approaching its April 14th opposition. The more rapid motion of Mars through the sky will bring it within 3° of Saturn at it passes it in mid-August.

Just about then, Jupiter returns to the evening sky as it approaches opposition on December 2nd. It's not every year that we have a good planetary target available almost every day. We'll surely be able to excite a lot of people at our star parties this year!

Of course, there will be the usual progression of stars, nebulae, and galaxies through the sky. The changes this year will come mostly in ourselves, as we make more observations and learn the sky better. The amount of change is up to us!

Every year also brings the possibility of the unexpected: a new comet, spectacular meteor shower, or a supernova, for example. Our work with the Starlight Reserve Committee should help keep our skies darker than they otherwise would be. Have a great year of observing in 2012.

Chris

Meeting Minutes

by Gretchen West

Prior to the meeting, many members, their families, as well as our guest speaker and his family partook in a holiday pot-luck dinner. Good food and lively conversation were on the menu. Everyone appeared to have enjoyed themselves.

President Chris Peterson called the December 6, 2011 meeting of the Hawaiian Astronomical Society to order at 7:35p.m. The meeting was held at the Planetarium on the grounds of the Bishop Museum. There were 28 members and one visitor in attendance.

Associated Lectures: There is no scheduled lecture for the Hawaii Space Lecture Series during the month of December due to the holidays. Additional information about upcoming lectures can be found by calling 808-956-3132 or at *http://www.higp.hawaii.edu/prpdc*. Regular lectures usually take place at the NASA Pacific Regional Planetary Data Center (PRPDC), room 544 in the Pacific Ocean Science and Technology Building on the Manoa campus of the University of Hawaii.

Astronomical League: ***Chris Peterson*** announced to the membership that there would be a special Keck Observatory live lecture in association with the Astronomical League. The lecture is scheduled for Thursday, December 8, 2011 at 7:p.m. Titled "Oodles of Exoplanets," the lecture will cover habitable planets outside our solar system. This will be a web event and the lecture should be available to individuals for a few days at *http://www.astroleague.org*.

Rental Scopes: Barry Peckham reports that he is cleaning up the recently returned

(Minutes continued from page 11)

NASA's Space Place

Dawn Takes a Closer Look

by Dr. Marc Rayman

Dawn is the first space mission with an itinerary that includes orbiting two separate solar system destinations. It is also the only spacecraft ever to orbit an object in the main asteroid belt between Mars and Jupiter. The spacecraft accomplishes this feat using ion propulsion, a technology first proven in space on the highly successful Deep Space 1 mission, part of NASA's New Millennium program.

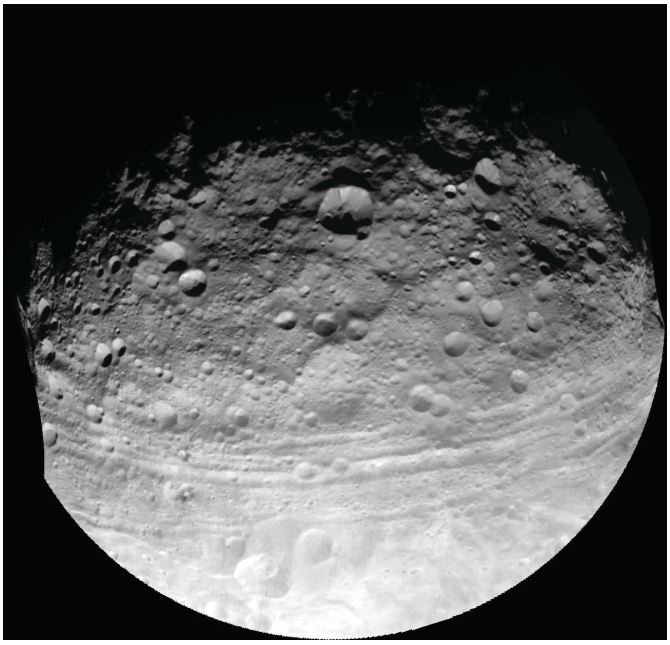
Launched in September 2007, Dawn arrived at protoplanet Vesta in July 2011. It will orbit and study Vesta until July 2012, when it will leave orbit for dwarf planet Ceres, also in the asteroid belt.

Dawn can maneuver to the orbit best suited for conducting each of its scientific observations. After months mapping this alien world from higher altitudes, Dawn spiraled closer to Vesta to attain a low altitude orbit, the better to study Vesta's composition and map its complicated gravity field.

Changing and refining Dawn's orbit of this massive, irregular, heterogeneous body is one of the most complicated parts of the mission. In addition, to meet all the scientific objectives, the orientation of this orbit needs to change.

These differing orientations are a crucial element of the strategy for gathering the most scientifically valuable data on Vesta. It generally requires a great deal of maneuvering to change the plane of a spacecraft's orbit. The ion propulsion system allows the probe to fly from one orbit to another without the penalty of carrying a massive

(Continued on page 9)



This full view of the giant asteroid Vesta was taken by NASA's Dawn spacecraft, as part of a rotation characterization sequence on July 24, 2011, at a distance of 5,200 kilometers (3,200 miles).

Credit: NASA/ JPL-Caltech/UCLA/ MPS/DLR/IDA

Meteor Log — by Tom Giguere

A single shower occurs in the first month of the new year… the ***Quadrantids (QUA)***. I have a special fondness for this shower as it was the first shower that I ever observed. It was rewarding to see multiple streaks of light and trace them back to the radiant. I recorded the number of meteors and the path of each one; however I didn't submit the information anywhere as I was fine with just viewing the spectacle.
The coming Quandrantids will be affected by the gibbous Moon but could still present a nice show. Remember that we in Hawaii have a special advantage over the colder climes in the rest of the U.S., this shower is under observed due to January's cold temperatures.

First Quarter	*Full Moon*	*Last Quarter*	*New Moon*
Jan. 1 & 31	**Jan. 9**	**Jan. 16**	**Jan. 23**

Shower	Activity	Max Date	λ_{2000}	Radiant α	Radiant δ	V_∞ km/s	*r*	ZHR
Quadrantids (QUA)	12/28-1/12	Jan. 4	283.16°	230°	+49°	41	2.1	120

If you observe this month's shower or any shower – let us know what you saw!
Happy Holidays, Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com
Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Complex Organic Molecules in Space — by Charles Rykken

This article is a review of a recent article in Nature by Sun Kwok and Yong Zhong that explains how very complex organic molecules are produced in space. A couple of quotes from the press release might help clarify the importance of the find:

"In today's issue of the journal Nature, astronomers report that organic compounds of unexpected complexity exist throughout the Universe. The results suggest that complex organic compounds are not the sole domain of life but can be made naturally by stars. The compounds are so complex that their chemical structures resemble those of coal and petroleum. Since coal and oil are remnants of ancient life, this type of organic matter was thought to arise only from living organisms. The team's discovery suggests that complex organic compounds can be synthesized in space even when no life forms are present."

In a separate article Professor Kwok says the full import of his findings are yet to be determined in the area known as abiogenesis, the study of how life arose from non-living matter. Most biologists believe that some form of self-replicating chemicals must have formed a bridge between inanimate chemical reactions and life.

(Continued on page 7)

Planets Close To the Moon

Times are Hawaii Standard Time

Jan 2, 14h, M 4.8º NNW of Jupiter
(108º from sun in evening sky)

Jan 13, 15h, M 8.4º SSW of Mars
(121º from sun in morning sky)

Jan 15, 07h, M 6.1º SSW of Saturn
(86º from sun in morning sky)

Jan 24, 21h, M 5.5º NNW of Neptune
(25º from sun in evening sky)

Jan 26, 04h, M 6.3º NNW of Venus
(39º from sun in evening sky)

Jan 27, 13h, M 5.5º NNW of Uranus
(54º from sun in evening sky)

Jan 30, 02h, M 4.4º NNW of Jupiter
(82º from sun in evening sky)

Other Events of Interest

Times are Hawaii Standard Time

Jan 4, Quadrantid meteors
(Favorable year for this major shower)

Jan 4, 14h, Earth at perihelion
(nearest the sun)
(Distance from sun = 0.98327 a.u.)

Jan 8, 21:31h, Moon Full

Jan 13, 06h, Venus 1.1º SSE of Neptune
(36º from sun in evening sky

Jan 14, January 1st in Julian calendar

Jan 22, 21:41h, Moon New

Jan 30, 17h, 433 Eros nearest to earth
(0.177 a.u. distance and magnitude 8.5)

☿ Mercury

Mercury is difficult to observe in January because it is close to the sun the entire month.

♀ Venus

Shines brightly in the west after sunset, setting about more than 3 hours after the sun.

♂ Mars

Rises about 10 pm this month and doubles in brightness from +0.2 to -0.5 mag.

♃ Jupiter

Jupiter is well placed for viewing in the evening sky. It is near the meridian at sunset.

♄ Saturn

Rises about midnight and can be observed in the morning sky before sunrise.

♅ Uranus

Uranus is in the southwestern sky during the early evening hours.

♆ Neptune

Visible in the southwest after sunset. Very close to Venus on Jan 12 and 13.

♇ Dwarf Planet Pluto

Reached conjunction with the sun in December and is still too close to the sun to observe.

Asteroid 433 Eros

Reaches opposition on Jan 30 in Sextans. Eros was the first Amor-type asteroid discovered. The spacecraft NEAR soft-landed on it in 2001.

(Organic Molecules continued from page 5)

A further quote from the press release says: "*The researchers investigated an unsolved phenomenon: a set of infrared emissions detected in stars, interstellar space, and galaxies. These spectral signatures are known as "Unidentified Infrared Emission features". For over two decades, the most commonly accepted theory on the origin of these signatures has been that they come from simple organic molecules made of carbon and hydrogen atoms, called polycyclic aromatic hydrocarbon (PAH) molecules. From observations taken by the Infrared Space Observatory and the Spitzer Space Telescope, Kwok and Zhang showed that the astronomical spectra have features that cannot be explained by PAH molecules. Instead, the team proposes that the substances generating these infrared emissions have chemical structures that are much more complex. By analyzing spectra of star dust formed in exploding stars called novae, they show that stars are making these complex organic compounds on extremely short time scales of weeks. Not only are stars producing this complex atter, they are also ejecting it into the general interstellar space, the region between stars. The work supports an earlier idea proposed by Kwok that old stars are molecular factories capable of manufacturing organic compounds. 'Our work has shown that stars have no problem making complex organic compounds under near-vacuum conditions,' says Kwok. 'Theoretically, this is impossible, but observationally we can see it happening.'*"

In a working paper of 2004 at the Santa Fe Institute, James P. Crutchfield and Olof Gornerup proposed a theory on how "Objects Make Objects" which uses the rapidly developing theory of machines learning to analyze the mathematics of how pre-biotic processes might have led to the bridge between non-life and life. This is one of many explorations in a field called artificial life.

Another pair from the Santa Fe Institute, Stuart Kaufmann and Giuseppe Longo have been putting forth the idea that the whole approach of *reductionism* (where life and abiogenesis are reduced to a series of complex chemical reactions) is likely to fail. In the article they propose that the present scientific paradigm answers "how" questions but not "why" questions. Darwinian Evolution answers questions such as "..why has the vertebrate eye emerged in the evolution of the universe?"

In closing, all cultures have their genesis myths and we are no different. In Western civilization we have been obsessed with grounded finitary causal explanations. In Eastern mythology the approach has been towards the infinitely interconnected reverberating network such as Indra's net. It may well be we are in the midst of a melding of East and West where the union may lead to a grand new form of science.

My intention has been to provide ahint of different ways to look at the origin of life question and hope it will beseen as a modest thought for your consideration.

Charles

For more information, see http://www.sciencedaily.com/releases/2011/10/111026143721.htm or http://www.scifac.hku.hk/file/news/1413/ Eng_press_release_Organic_Matter_in_the_Universe_.pdf

Hawaiian Astronomical Society

Event Calendar

< January 2012 >

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
New Year's Day 1	2	7:30 PM Club Meeting 3	4	5	6	7 Sunset: 6:06 PM
8	9	10	11	12	13	5:45 PM Club Star Party (D) 14 Sunset: 6:10 PM
15	Martin Luther King, Jr. Day 16	17	18	4:00 PM NSN Teleconference 19	20	5:45 PM Public Star Party(D) 21 Sunset: 6:15 PM
22	23	24	25	26	6:30 PM Waikike Elem School SP 27	5:45 PM Public Star Party(K) 28 5:45 PM Public Star Party(G) Sunset: 6:20 PM
29	30	31	1	2	3	4

Night Sky Network News *by John Gallagher*

"Telecon with amateur astronomer Chuck Bueter, about the many resources available for sharing the Transit of Venus which will occur on Tuesday, June 5th, 2012.
The telecon is scheduled for Thursday, January 19th, 2012 at 4:00 pm (HST). Details can be found on the Night Sky Network (NSN) on the HAS calendar for January. Just click on the "Telecon" for the date and you will be taken to a web page that will show additional information, sign in procedures, and a link to the power point slides. The link to the NSN Calendar is: http://nightsky.jpl.nasa.gov/event-calendar.cfm?Club_ID=453 (Note:you must be a member of the NSN to see the details). For additional info contact John Gallagher, NSN Coordinator at 683-0118 (leave message).

(Space Place continued from page 4)
supply of propellant. Indeed, one of the reasons that traveling from Earth to Vesta (and later Ceres) requires ion propulsion is the challenge of tilting the orbit around the sun.

Although the ion propulsion system accomplishes the majority of the orbit change, Dawn's navigators are enlisting Vesta itself. Some of the ion thrusting was designed in part to put the spacecraft in certain locations from which Vesta would twist its orbit toward the target angle for the low-altitude orbit. As Dawn rotates and the world underneath it revolves, the spacecraft feels a changing pull. There is always a tug downward, but because of Vesta's heterogeneous interior structure, sometimes there is also a slight force to one side or another. With their knowledge of the gravity field, the mission team plotted a course that took advantage of these variations to get a free ride.

The flight plan is a complex affair of carefully timed thrusting and coasting. Very far from home, the spacecraft is making excellent progress in its expedition at a fascinating world that, until a few months ago, had never seen a probe from Earth.

Keep up with Dawn's progress by following the Chief Engineer's (yours truly's) journal at http://dawn.jpl.nasa.gov/mission/journal.asp. And check out the illustrated story in verse of "Professor Starr's Dream Trip: Or, how a little technology goes a long way," at http://spaceplace.nasa.gov/story-prof-starr.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration. ☆

HAS member ***Sue Girard*** documents her series of images from the **December 11 total lunar eclipse**:

"Earthshine effects shows up and causes the [moon's] disk to glow red. In pictures 3, 6 and 7 the 'bluish' effect can be seen near the edge (atmospheric effect from Earth). Pictures 4 and 5 show the beautiful 'orange' globe of totality (sunlight reflecting through the Earth's atmosphere illuminates the Moon's entire disk).
Pictures start at 3:45AM (pic 1). Totality started at about 4:06AM (pics 4&5) and lasted until around 5:00AM. There wont be another until 2014!"

Sue G.

Treasurer's Report

by Jim MacDonald

HAS Financial Report for the month ending as of Dec. 15, 2011

Initial Balance:	**$4,145.25**
Receipts:	
Donations	-- --
Dues Received	40.00
Magazine Payments	66.95
Total Income:	**$106.95**
Expenses:	
Astronews	125.54
Domain Name Fee	35.40
Postage	5.10
Staten Business Registration	2.50
Total Expenses:	**$264.54**
Final Balance	**$3,987.66**

The club's membership count for this month remained the unchanged. Thanks to all those who renewed their membership this month.. Come join under our winter skies for some unforgettable views.

<<Upcoming Star Parties>>

Kahala/Ewa Party	**Jan 28**
Public Party-Dillingham	**Jan 21**
CLUB Party-Dillingham	**Jan 14**

☆ ☆ Upcoming School Star Parties ☆ ☆

Fri.	**1/27**	Waikiki Elementary (Diamond Head)
Fri.	**2/24**	Iolani School Space Night
Fri.	**3/30**	Hokulani Elementary (St. Louis)
Fri.	**4/20**	Boy Scouts - Schofield Barracks (Wahiawa)
Fri.	**4/26**	Ala Wai Elementary (McCully)

(Minutes continued from page 7)
telescope for use again as a rental. Chris Peterson urged those members without scopes to rent a scope, use it at home and to join us by bring it out to star parties.

Science News: During the Fall meeting of the European Geosciences Union, recent results of the Mercury Messenger Mission were announced.

Christmas/Calendars: ***Jim MacDonald*** reminded members who had ordered Astronomy calendars could contact Jim to pick up their purchases.

Dillingham Airfield: H.A.S. has received a reply to our request to continue conducting star parties at Dillingham Airfield. We have permission from the Department of Transportation to use the site, but we will have limited gate access. The security guard will close the gates at the posted time, 7:00 p.m. We will be speaking to the guard to establish times for entrance and exits at 8:30 p.m., 10:30 p.m. and 12:00 a.m. We want to maintain a good working relationship with the security guard on site and ask for members help through adherence to the rules.

Star Light Reserve Committee: ***Chris Peterson*** will attend the December 14th meeting. Chris indicated that the committee hopes to see the ratification of the bill that will result in the state replacing the existing streetlights with full cut-off fixtures, saving the state money. ***Harry Zisko*** informed the membership that he did broach the subject of designating a geographic area as a star light reserve on the North Shore of O`ahu. Harry indicated that Richard Wainscoat exhibited interest in the idea.

International Observe the Moon Night: Took place on October 8, 2011. We hope members celebrated this evening at home and we had a few members who joined us at Geiger Park in leeward O`ahu and at Kahala Community Park in West O`ahu on our regularly scheduled, free suburban star party night

School Star Party Report: We have no star parties scheduled during December. However, if you are interested in participating in star parties, contact ***John Gallagher***.

Elections: ***Barry Peckham*** and ***Paul Lawler*** declined to stand for election this year. ***Leslie Galloway*** was nominated to stand for election to the position of Vice President. ***April Lew*** was nominated to stand for election to the position of At-Large member. The following were voted into office by unanimous vote. New board is as follows:

President – Chris Peterson
Vice President – Leslie Galloway
Secretary – Gretchen West
Treasurer – Jim MacDonald
ASTRONEWS Editor – Carolyn Kaichi
At-Large Members - Susan Girard and April Lew

After the elections were concluded, ***Peter Besenbruch*** offered to help with refreshments as well.

Website News: ***Peter Besenbruch*** has given the website password to authorized members to help with up dating the website.

Guest Speaker: Dr. Richard A. Keen; Instructor Emeritus, University of Colorado at Bolder, spoke to the membership about "Volcanoes and Climate Change Since 1980: A View from the Moon." His talk encompassed lunar eclipses and weather effects eclipses. Dr. Keen spoke at length about weather patterns from 1980 to 2008. He indicated that severe volcanic eruptions, within one year of eclipses, have a decided effect on the observable hues seen during total lunar eclipses. Materials/particulates thrown into the stratosphere take longer to find their way back to the Earth's surface and affect weather as well as coloring sunsets.

As there was no further business, the meeting was adjourned at 9:12 PM

Respectfully Submitted,

Gretchen West
Secretary

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Comet Lovejoy as imaged by astronauts onboard the International Space Station. The comet flew through the atmosphere of the sun on Dec. 16 and survived, to the surprise of experts. See more images posted online on the Hawaiiian Astronomical Society new ***Facebook*** page as well as links to HAS members' "Walls".
Image courtesy NASA