The Astronews

Volume 61, Issue 3

March 2013

www.hawastsoc.org

Another Close Fly-by

NASA Science News

In early March, a comet named PanSTARRS will pass about 100 million miles from Earth as it briefly dips inside the orbit of Mercury. Most experts expect it to become a naked-eye object about as bright as the stars of the Big Dipper.

The comet was named by the scientists that discovered it in June 2011 using the Panoramic Survey Telescope & Rapid Response System (PanSTARRS) atop Haleakala. Astronomers use the massive 1.8 meter telescope to scan the heavens for Earth-approaching objects, both asteroids and comets, that might pose a danger to our planet.

"Because of its small distance from the sun, PanSTARRS should be very active, producing a lot of dust and therefore a nice dust tail," predicts Matthew Knight of the Lowell Observatory.

"However," he cautions, "it could still be difficult to see. From our point of view on Earth, the comet will be very close to the sun. This means that it is only observable in twilight when the sky is not fully dark."

The best dates to look may be March 12th and 13th when Pan-STARRS emerges in the western sunset sky not far from the crescent Moon. "My guess is that the primary feature visible to the naked eye will be the gaseous coma around the head of the comet," says Knight. "The comet's tail will probably require binoculars or a small telescope."

Two other key dates are March 5th when the comet comes closest to Earth (about 100 million miles away) and March 10th, when the comet comes closest to the sun. ☆

Inside this issue:

Upcoming Events:

☆The next meeting is 7:30PM on **Tues., Mar 5** at the Bishop Museum Planetarium

☆Planetarium shows with **Barry Peckham** are ON HOLD until further notice. www.bishopmuseum.org/calendar

☆The next Board Meeting is Sun., **Mar 3** at 3:30 p.m. at the POST building at UH.

Up To The Minute:

Sky&Telescope Subscription Procedures

RENEWALS - The publisher will now only accept *renewals* directly by subscribers. They will send you a mailable renewal form for a one-or two-year subscription. You may include a check payable to Sky & Telescope or your credit card information. Make sure that the club rate of $32.95 is shown.

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NEW SUBSCRIPTIONS - must come through the *club treasurer* for verification of membership to be eligible for the club rate. **These payments are to be made payable to HAS for ease of processing.** *- Jim*

☆ ☆ ☆

Keck Week 2013 March 13-19

Going to be on the Big Island soon (or looking for an excuse to have a vacation)? Keck Observatory is celebrating its 20th anniversary with week-long activities for the science and general communities. While most of the events include admission, there is an Open House Day (in Waimea) and a movie screening which is open at no charge. See the Keck website for more details: http://www.keckobservatory.org/keck_week_2013_events

☆ ☆ ☆

Starlight Committee Volunteer(s)

The Committee to work on legislation influencing future outdoor lighting in Hawaii is attempting to reconvene in late March.

Our current delegate, Harry Zisko, is appealing for more volunteering in the event his schedule does not allow his attendence. If you are available, please contact Harry or one of the HAS Board Members. Mahalo!

- editor

Hawaiian Astronomical Society
P.O. Box 17671
Honolulu, HI 9681-0671

President
Chris Peterson
956-3131
chrisp@higp.hawaii.edu

Vice-President
Leslie Galloway
636-1024
gallowayL001@hawaii.rr.com

Secretary
Gretchen West
282-1892
gwest002@hawaii.rr.com

Treasurer
Jim MacDonald
371-8759
jim.macd@hawaiiantel.net

The Astronews **Editor**
Carolyn Kaichi
551-1030
c.kaichi2001@gmail.com

Board Members at-Large
Sue Girard
341-6114
socrux@hawaiiantel.net

April Lew
734-2705
stardustlounge@hotmail.com

HAS Webmasters
Peter Besenbruch
peter@besenbruch.info
Harry Zisko
harryz@pobox.com

School Star Party Coordinator
John Gallagher
gallaghej002@hawaii.rr.com

The Astronews is a monthly newsletter of the Hawaiian Astronomical Society.

President's Message

by Chris Peterson

We were all expecting asteroid 2012 DA14 to pass close by Earth on February 15th. What we didn't realize was that a different asteroid would enter Earth's atmosphere earlier that day and injure about 1000 people, the most people an asteroid has injured in recorded history. Russian scientists have recovered some pieces of the resulting meteorite already and determined that it is an ordinary chondrite, the most common kind of meteorite.

This asteroid was estimated to be about 17 meters in diameter, about half the diameter of 2012 DA14, with an estimated mass of 10,000 tons. The shock waves generated when it was slowed to subsonic speed and broken apart by Earth's atmosphere shattered windows beneath its path. Most of the injuries were caused by the flying shards of broken glass.

Videos showing the effects of the shock wave inside buildings can be found on the internet. Watching one of them gave me a better understanding of the Tunguska event of 1908, the last such event that was bigger than this one. The body responsible for that event may have been about 100 meters in diameter. That explosion flattened forests covering over 800 square miles. There was severe damage in both cases even though little of it was caused by pieces actually striking the ground. Fortunately, the Tunguska event occurred in a part of Siberia with low population density.

My first thought when I saw news accounts of the recent event was that the two asteroids might be related. Asteroids sometimes collide with each other. When this happens, pieces are sent flying in different directions. However, the new orbits are very similar to those of the parent bodies. Astronomers look at orbital parameters such as perihelion and aphelion and inclination from the ecliptic plane. Asteroid fragments from a collision will have similar values of such parameters. There are many such asteroid "families" that are believed to derive from collisions. If one fragment has a particular orbit, it's reasonable to assume that there may be other smaller fragments below our detection limit in very similar orbits.

However, the asteroid responsible for the recent Russian event came from another direction, so it was not related to 2012 DA14. This was just a coincidence with "astronomical" odds against it.

Chris

See accompanying story on page 9 (Star Party Report)
Photo courtesy: Sue Girard

Feb Club Star Party 2013 at Dillingham

The Art of Space Imagery

By Diane K. Fisher

How does NASA get its ideas for new astronomy and astrophysics missions? It starts with a Decadal Survey by the National Research Council, sponsored by NASA, the National Science Foundation, and the Department of Energy. The last one, New Worlds, New Horizons in Astronomy and Astrophysics was completed in 2010. It defines the highest-priority research activities in the next decade for astronomy and astrophysics that will "set the nation firmly on the path to answering profound questions about the cosmos." It defines space- and ground-based research activities in the large, midsize, and small budget categories.

The recommended activities are meant to advance three science objectives:

1. Deepening understanding of how the first stars, galaxies, and black holes formed,
2. Locating the closest habitable Earth-like planets beyond the solar system for detailed study, and;

(Continued on page 9)

This composite image of "Pandora's Cluster" of galaxies begins to reveal the mysteries of dark matter.

Credit: NASA

Clusters of galaxies collide in this composite image of "Pandora's Cluster." Data (in red) from NASA's Chandra X-ray Observatory show gas with temperatures of millions of degrees. Blue maps the total mass concentration (mostly dark matter) based on data from the Hubble Space Telescope (HST), the European Southern Observatory's Very Large Telescope (VLT), and the Japanese Subaru telescope. Optical data from HST and VLT also show the constituent galaxies of the clusters. Such images begin to reveal the relationship between concentration of dark matter and the overall structure of the universe.

What a month for "meteors"…! February is normally a fairly quiet month for meteor showers but this month was certainly an exception. Although the count was low with one near miss and one hit, the two objects certainly captured the world's attention. We all eagerly anticipated the arrival of asteroid 2012 DA14 on February 15th. It certainly didn't disappoint, passing Earth at a distance of about 17,200 miles. The asteroid was imaged with radar from the Deep Space Network at Goldstone, California: http:// www.nasa.gov/mission_pages/asteroids/news/asteroid20130219.html

While we focused on the flyby event, the Russian meteor/meteorite grabbed the headlines. The ***picture below*** shows the meteorite contrail as seen over Chelyabinsk. The meteor streaked across the sky over the Ural Mountains and created a sharp explosion and reportedly injured around 1,000 people, mainly hurt by broken glass. This dramatic event single handedly made meteor observers out of millions of people and brought awareness to our place in the solar system and the occasionally chaotic events that can occur.

Meanwhile, back to our usual meteor report we have one small shower in March, the Gamma Normids (GNO). This southerly shower sports up to six meteors per hour, not a barn burner, so we will have to look forward to the Lyrids in April.

Last Quarter	*New Moon*	*First Quarter*	*Full Moon*
Mar 04	**Mar 11**	**Mar 19**	**Mar 27**

Shower	Activity	Max Date	λ 2000	Radiant α	Radiant δ	V∞ km/s	*r*	ZHR
Gamma Normids (GNO)	2/25 - 3/22	Mar 14	354°	239°	-50°	56	2.4	6

Keep an eye out for another "big" one!

Tom Giguere, 808-782-1408, ***Thomas.giguere@yahoo.com***
Mike Morrow, PO Box 6692, Ocean View, HI 96737

Planets Close To the Moon

Times are Hawaii Standard Time

Mar 2, 05h, M 3.5° S of Saturn
(120° from sun in morning sky)

Mar 10, 03h, M 5.5° NNW of Neptune
(17° from sun in morning sky)

Mar 12, 15h, M 4.0° NNW of Uranus
(15° from sun in evening sky)

Mar 17, 15h, M 1.5° S of Jupiter
(72° from sun in evening sky)

Mar 29, 10h, M 3.4° S of Saturn
(148° from sun in morning sky)

Mars, Venus and Mercury are closer that 15° from the sun when near the moon in March.

Other Events of Interest

Times are Hawaii Standard Time

Mar 4, 03h, Mercury at inferior conj. with sun (Passes into morning sky)

Mar 11, 09:53h, Moon new

Mar 19, 08h, Mercury 2.4° NE of Neptune (24° from sun in morning sky)

Mar 20, 01:02h, Spring or Vernal Equinox

Mar 26, 23:29h, Moon full

Mar 28, 07h, Venus at superior conj. with sun (Passes into evening sky)

Mar 28, 16h, Neptune at conjunction with sun (Passes into evening sky)

Mar 31, 12 h, Mercury at greatest elongation
(27.8° west of the sun in morning sky)

☿ Mercury

Mercury makes a rather poor morning appearance in the morning sky at the end of the month.

♀ Venus

Reaches conjunction this month and passes into the evening sky, but is too close to the sun to view.

♂ Mars

Mars is now too close to the western horizon after sunset to be viewed.

♃ Jupiter

Jupiter is well placed for viewing in the early evening sky.

♄ Saturn

Rises before midnight and is best observed near the meridian in the early morning hours at mag +0.2.

♅ Uranus

Uranus is too close to the sun to be easily viewed in March.

♆ Neptune

Too close to the sun to be viewed in March.

Dwarf Planet ♇ Pluto

Visible in the morning sky before dawn, but will be better placed for viewing later in the year.

Comet PanSTARRS

Makes an appearance low in the western evening sky mid-month. Latest projections are that it will only reach Mag. +3.

Meeting Minutes

by Gretchen West

President Chris Peterson passed around notices for the next Data Center lecture which would cover some recent news of the Mars Curiosity rover.

Possible Guest Speaker: Michael Chauvin of the Hawaiian Skies organization is offering to speak to the club on a variety of subjects. He donated some copies of his book on the transit of Venus observed from Hawaii in the 1880s.

Swap Meet Plans: A suggestion was made to have a swap meet at one of our future meetings, possibly in June. Members are asked to bring any materials they wish to sell or swap.

Park Permit: ***Barry Peckham*** has obtained the permit for our Kahala Park star parties.

Sky & Tel News: ***Jim MacDonald*** said that Sky & Telescope no longer accepts email renewals from the club. Renewals must be done by each member, but new members must go through him. Check with Jim for any questions or issues concerning renewals. Jim also said that members can get online copies of the HAS newsletter rather than have them mailed through the postal service if they wish.

T-Shirts: The new HAS T-shirts are here, check with Jim for details or to order them.

School Star Parties: ***John Gallagher*** reported that the next school star party will be Feb 22nd (Iolani 3rd graders) and passed the clipboard around for volunteers. He also mentioned that he would send out reminder notices via emailed about two days before the event.

John also mentioned an issue with 'non-club' folks who try to log into the Night Sky Network under the HAS name. You need to be an HAS member to log in.

Rental Scopes: Bishop Museum Planetarium has given HAS permission to store our rental scopes at the Planetarium so folks renting them can pick up or drop them off at a meeting.

Telescope Tips: ***Steve Chun*** mentioned that he is using a 'Herschel wedge' on his refractory telescope to view the Sun and it gives a sharper view. Check with him to inquire about his setup.

Asteroid Close Encounter: ***Chris Peterson*** reminded members about the upcoming close pass of an asteroid on Feb 15, but noted that it would not be visible in Hawaii because it occurs during. the daytime here.

The program for the evening was presented by Mike Shanahan from the Bishop Museum Planetarium who gave us a very nice demonstration of the new Planetarium program facilities. The members were quite impressed with all of the different features of the new Goto planetarium setup.

Respectfully Submitted (for the ailing ***Gretchen West)***,

Sue Girard

List View Past Events < March 2013 > Upcoming Events Add/Log Event

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
24	25	26	27	28	1	2 6:15 PM Public Star Party(D) Sunset: 6:38 PM
3 8:00 PM Globe at Night	4 8:00 PM Globe at Night	5 8:00 PM Globe at Night 7:30 PM Club Meeting	6 8:00 PM Globe at Night	7 8:00 PM Globe at Night	8 8:00 PM Globe at Night	9 8:00 PM Globe at Night 6:15 PM Club Star Party (D) Sunset: 6:41 PM
10 8:00 PM Globe at Night	11 8:00 PM Globe at Night	12 8:00 PM Globe at Night	13	14	15	16 6:15 PM Public Star Party(G) 6:15 PM Public Star Party(K) Sunset: 6:43 PM
17	18	19	20	21	22	23 8:00 PM HPU Family Weekend Sunset: 6:45 PM
24	25	26	27	28 7:15 PM 3rd Grade Sleepover	29	30 Sunset: 6:47 PM
31 8:00 PM Globe at Night	1	2	3	4	5	6

NOTICE:

HAS will publish a complete listing of Club members in the **June 2013** issue of the Astronews. This publication is required by Club by-laws, Article III, Section 2 Para C(e) and Article VIII, Section 1B. Unless notified otherwise, this list will include all member's names, mailing addresses, and phone numbers. If you wish to have some or all of your data excluded, please notify the Club Treasurer, ***Jim MacDonald*** before **May 15, 2013** by sending him an e-mail at ***jim.macd@hawaiiantel.net*** or by written notice to the Club's post office box listed on the back page of this newsletter. Please be advised that this listing is intended for Club members' personal use only in contacting one another. It is not to be used for any commercial or solicitation purposes. With the exception of our membership in the Astronomical League, HAS does make this list available to, nor do we sell its contents to anyone for any purpose. Please respect our member's right to privacy.

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(Space Place continued from page 4)

3. Using astronomical measurements to unravel the mysteries of gravity and probe fundamental physics.

For the 2012-2021 period, the highest-priority large mission recommended is the Wide-field Infrared Survey Telescope (WFIRST). It would orbit the second Lagrange point and perform wide-field imaging and slitless spectroscopic surveys of the near-infrared sky for the community. It would settle essential questions in both exoplanet and dark energy research and would advance topics ranging from galaxy evolution to the study of objects within the galaxy and within the solar system.

Naturally, NASA's strategic response to the recommendations in the decadal survey must take budget constraints and uncertainties into account.

The goal is to begin building this mission in 2017, after the launch of the James Webb Space Telescope. But this timeframe is not assured. Alternatively, a different, less ambitious mission that also address the Decadal Survey science objectives for WFIRST would remain a high priority.

The Astrophysics Division is also doing studies of moderate-sized missions, including: gravitational wave mission concepts that would advance some or all of the science objectives of the Laser Interferometer Space Antenna (LISA), but at lower cost; X-ray mission concepts to advance the science objectives of the International X-ray Observatory (IXO), but at lower cost; and mission concept studies of probe-class missions to advance the science of a planet characterization and imaging mission.

For a summary of NASA's plans for seeking answers to the big astrophysics questions and to read the complete Astrophysics Implementation Plan (dated December 2012), see ***http://science.nasa.gov/astrophysics/***. For kids, find lots of astrophysics fun facts and games on The Space Place, ***http://spaceplace.nasa.gov/menu/space/.*** ☆

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

Star Party Report

by Sue Girard

Dillingham Public Star Party - February 9, 2013

We had a pretty good turnout of visitors and members for our February public Star Party. ***Leslie Galloway*** was the Key Master for the evening. The sky conditions were not too bad considering that there was still a fair amount of haze in the air, but not as much as the previous weeks outing. I thought the wind might be an issue, but it calmed down as the Sun set and the temperature fell. It didn't get as cold as at last weeks party either, so that made for a much more pleasant evening. We had about 26 cars and 60+ people including some visitors from Salt Lake City who were with ***Gary Ward's*** group.

Jupiter shined brightly overhead and, for the most part, gave pretty good viewing. Some high altitude clouds drifted across the sky at intervals, so we had to shift from one area to another as the night progressed. Most of our favorite 'visitor' objects were viewable so everyone was happy and inquisitive. The Orion Nebula was high overhead, so we got some stunning views of it as well as catching the last glimpses of the Andromeda galaxy before dipped below the tree line. The Big Dipper is rising now and visitors really were impressed with galaxies M81 and M82.

Most all of our visitors left at 8:30pm, but most of us members stayed until 10:30pm when the high altitude clouds started to interfere with the observing. All in all, not too bad a night! (see photo page 3)

Sue

Treasurer's Report

by Jim MacDonald

HAS Financial Report for the month ending as of Feb. 15, 2013

Initial Balance:	**$4,778.76**
Receipts:	
Calendars	13.00
Donations	35.40
Dues Received	166.00
Telescope Fee	20.00
Polo Shirt Deposit	53.40
Total Income:	**$287.80**
Expenses:	
Astronews	151.46
Magazine Subscriptions	68.00
Excise Tax	11.03
Polo Shirts	390.10
Postage	17.45
Total Expenses:	**$638.04**
Final Balance	**$4,430.52**

The club gained one new member this month. He is ***Andre Plourde***. A special thanks to ***Peter Besenbruch*** for his donation.

A reminder to those whose membership expired at the end of last year. **Check your mailing label for your anniversary date.** Thank you to all renewing their yearend membership on time.

<<Upcoming Star Parties>>

Public Party-Dillingham	**Mar. 2**	(Girard)
CLUB Party-Dillingham	**Mar. 9**	(West)
Kahala/Ewa Party	**Mar. 16**	

☆ ☆ Upcoming School Star Parties ☆ ☆

Sat.	**3/23**	HPU Family Weekend (Kaneohe)
Thurs.	**3/28**	Hokulani Elementary (UH/St. Louis)

From the Editor: This is part of a continuing series contributed by Joseph E. Ciotti, Professor of Physics, Astronomy & Mathematics/ Director of the Center for Aerospace Education, Windward Community College, University of Hawai'i

This article originally appeared in The Hawaiian Journal of History, Vol. 45, 2011

LOCATION-LOCATION-LOCATION (cont.)

By 1999, the tally of observatories had soared to thirteen, including the then-largest telescopes on earth—the two 10-meter telescopes at the Keck Observatories. With the turn of the millennium, astronomers were poised for more even greater projects. But intervening events had already broken the trust of the Hawaiian community and created a rift between these two cultures.

By 2001 the growing dissension had reached national attention, when Los Angles Times science writer Usha McFarling wrote:

"The emotionally charged debate over modern and ancient uses of this rocky pinnacle is much more, though, than a fight over a telescope or a mountaintop. To many Hawaiians, nothing less than the future of their homeland is at stake. And it is a perfect example of the often-fumbling progress of science in a multicultural world.
Once prized for the clean industry and jobs they brought to this economically challenged island, astronomers are now lumped in with the missionaries, whalers, plantation owners and golf-course developers who have taken turns carving up this island."

Vocal opposition to the development of Mauna Kea had erupted with a fury that both stunned and frustrated the astronomy community. In order to understand the undermining causes of this turmoil, one needs to examine the beliefs and behaviors of these two cultures in light of the volatile political situation that was concurrently surfacing in Hawai'i.

PERFECT STORM—THE MAKING OF A CULTURE RIFT

During the 1990s, a series of events converged to create a perfect storm that stirred up this heated dispute over Mauna Kea.

With the centennial of the Hawaiian Kingdom's overthrow approaching in 1993, vocal activism on sovereignty issues was beginning to emerge within various Hawaiian factions. When Hawai'i was annexed in 1898, the crown lands of the Hawaiian monarchy were ceded to the U. S. Federal government. These 1.8 million acres of ceded lands constitute about 25% of the total land area of Hawai'i. Upon gaining statehood, these ceded lands were transferred to Hawai'i and placed in trust to support among other things public education and the betterment of native Hawaiians. Disputes over the distribution of these revenues have resulted in various legal battles and social uproar.

The summit of Mauna Kea, along with its entire complex of observatories, falls within the boundaries of these ceded lands. In 1968, the UH was granted a 65-year lease on a section known as the Mauna Kea Science Reserve (MKSR), an area 2.5 miles in radius that is centered on the UH 2.2 m telescope. This includes an Astronomy Precinct of 525 acres upon which the observatories sit. The UH leases this land for $1 a year and subleases portions of the MKSR to all other non-UH observatories.

In an attempt to impress others over their cutting-edge instruments, astronomers often cited the exorbitant cost for observing time at these telescopes—estimated at $1 per second. This unwittingly gave the impression that the UH had found a golden goose—which was, however, to become more of a golden noose. In contrast to the dollar-a-year lease the UH was paying, some began wondering where all the sublease funds were going. It didn't placate matters to point out that these subleases were in-kind compensations to UH consisting of 10% of the observing time and that non-UH facilities were also responsible for road maintenance and other support. The perception was that the UH was benefiting handsomely from these ceded lands. It was difficult to see how this research bonanza was benefiting native Hawaiian students at UH or elsewhere.

(To Be Continued) ☆

Hawaiian Astronomical Society
P.O. Box 17671
Honolulu, HI 96817-0671

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A "new" comet (PanSTARRS) is headed our way from the Oort Cloud and is predicted to make a close enough approach to Earth to become visible. See animation at http://science.nasa.gov/science-news/science-at-nasa/2013/06feb_panstarrs/

or related information in this issue on page 1 and page 6 (Observer's Notebook).

Image courtesy: ***NASA***