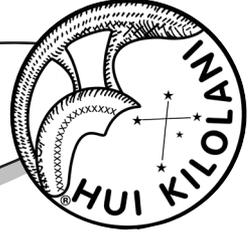


The Astronews



Volume 61, Issue 8

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www.hawastsoc.org

"A thrilling account . . . The author's enthusiasm is infectious in this chronicle of astronomical passion." —*Kirkus Reviews*



THE FALLEN SKY

*An Intimate History
of Shooting Stars*

CHRISTOPHER COKINOS

author of *Hope Is the Thing with Feathers*

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Upcoming Events:

- ☆ The next meeting is 7:30PM on **Tues., Aug 6** at the Bishop Museum.
- ☆ Bishop Museum's next evening planetarium shows are every Saturday of the month at 8:00 p.m.
www.bishopmuseum.org/calendar
- ☆ The next Board Meeting is **Sun., Aug 4** at 3:30 p.m. at the POST building at UH.

Meteor Report contributor Tom Giguere shares his recommendation of this book (see page 5 for review and meteor information). Get ready for the *Perseids* this month!





**A PLEA FROM HAS VOLUNTEER
COORDINATOR JOHN GALLAGHER**

One of the primary missions of the Hawaiian Astronomical Society is to bring the wonders of the night sky to the public. When possible, HAS sponsors three public star parties each month, at Dillingham Air Field, Geiger Community Park, and Kahala Community Park. All public star parties are on Saturday nights.

While our club has around 120 members only about 20 members are active in supporting the clubs outreach programs such as school and public star parties and special events.

For the club to fulfill our primary mission, the support of *all* members is needed. It is not expected that you can support all the events but any time or skills are appreciated when possible. Even without a telescope, you can help make an evening of star gazing interesting for visitors.

The public star party at Geiger Community Park is where the most help is needed. The last event at Geiger had only two club members present. We had around 33 visitors overall including 20 adults and 13 children.

If every able member made an effort to support at least one public event per month, not only would visitors benefit but you would have the personal satisfaction of sharing the night sky. Please consider attending one outreach event each month to support *your* club.

Clear Nights,
John G.



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**The Hawaiian Astronomical
Society is now on**

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The Earth had its picture taken by two spacecraft recently. Cassini took a mosaic of Saturn while behind its night side that included Earth, and MESSENGER is searching for small moons of Mercury by taking images that include Earth. We in Hawaii were not on the side of Earth that contributed to the single pixel Earth represents in any of the images, but it is rather amazing to think that humans are taking pictures of Earth from two spacecraft orbiting planets hundreds of millions of miles apart.

What would astronomy be like from other planets? Within the lifetime of anyone alive today, there are probably only two other bodies where humans will establish settlements – The Moon and Mars. Let's think about those.

The Moon would be an astroimager's dream location. With no atmosphere to scatter light or bad weather to contend with, simple shielding from the direct sunlight would allow observations any time of day or night. The Moon's slow rotation means that any given target would be above the horizon for an average of two weeks at a time (depending on your location on the Moon), and views near the horizon would be as good as those overhead. At high latitudes, there would be no limit on integration time for circumpolar targets.

Observing Earth would be fun. Not much repositioning of your telescope would be necessary since Earth hangs in about the same place in the sky, shifting slightly from the Moon's libration. You could spend hours watching it slowly spin as it goes through phases complementary to those on the Moon as seen from Earth.

Observing Earth from Mars would be similar to observing Venus from Earth. The range in angular size of Earth would be similar to what we see on Venus, and Earth would get almost as large in the eyepiece at closest approach. There would certainly be more detail to be potentially spotted, and there would be the added attraction of Earth's Moon. The outer planets would all be slightly bigger in the eyepiece at their best. Asteroid hunting would be most noticeably improved with the greater proximity to the main asteroid belt.

Who will be first to try this out? I'd love to see those images!

Chris 

NASA Science News: Perseid Fireballs

In astronomy, there's nothing quite like a bright meteor streaking across the glittering canopy of a moonless night sky. The unexpected flash of light adds a dash of magic to an ordinary walk under the stars.

New research by NASA has just identified the most magical nights of all.

"We have found that one meteor shower produces more fireballs than any other," explains Bill Cooke of NASA's Meteoroid Environment Office. "It's the Perseid meteor shower, which peaks on August 12th and 13th."

Using a network of meteor cameras distributed across the southern USA, Cooke's team has been tracking fireball activity since 2008, and they have built up a database of hundreds of events to analyze. The data point to the Perseids as the 'fireball champion' of annual meteor showers.

A fireball is a very bright meteor, at least as bright as the planets Jupiter or Venus. They can be seen on any given night as random meteoroids strike Earth's upper

Inventing Astrophotography: Capturing Light Over Time

By Dr. Ethan Siegel

We know that it's a vast Universe out there, with our Milky Way representing just one drop in a cosmic ocean filled with hundreds of billions of galaxies. Yet if you've ever looked through a telescope with your own eyes, unless that telescope was many feet in diameter, you've probably never seen a galaxy's spiral structure for yourself. In fact, the very closest large galaxy to us--Andromeda, M31--wasn't discovered to be a spiral until 1888, despite being clearly visible to the naked eye! This crucial discovery wasn't made at one of the world's great observatories, with a world-class telescope, or even by a professional astronomer; it was made by a humble amateur to whom we all owe a great scientific debt.

Beginning in 1845, with the unveiling of Lord Rosse's 6-foot (1.8 m) aperture telescope, several of the nebulae catalogued by Messier, Herschel and others were discovered to contain an internal spiral structure. The extreme light-gathering power afforded by this new telescope allowed us, for the first time, to see these hitherto undiscovered cosmic constructions. But there was another possible path to such a

(Continued on page 9)



*Great Nebula in Andromeda, the first-ever photograph of another galaxy. Image credit: Isaac Roberts, taken December 29, 1888, published in *A Selection of Photographs of Stars, Star-clusters and Nebulae, Volume II, The Universal Press, London, 1899.**

The main attraction this month is the Perseid Meteor Shower, with a maximum on August 12th. This shower is best observed after midnight, so the five day old Moon will have set by the time the action really gets going.

On another topic, I wanted to let you know about an interesting book that I read recently. The Fallen Sky, by Christopher Costinos (see picture on front cover of newsletter), takes us on a journey through time and around the globe to visit some of the most famous meteorite falls. He first educates us on the connection between asteroids and meteorites, and then one-by-one provides an in-depth visit, often in person, with each meteorite beginning with the 15-ton Willamette that fell in Canada, moved to Oregon, but now resides at the American Museum of Natural History. Since this rock also goes by the moniker of Tomanowos so named by the Grand Ronde indian tribe, we begin to get an idea of how complicated the history can be. It's not unusual to find ownership disputes, deceit, lawyers, theft and other debauchery intertwined with each story. Later on we are introduced to other famous personalities in the business, such as Peary, Barringer, Nininger, etc. and eventually to his meteorite hunting expedition in Antarctica. These stories reveal surprise connections to our own Hawaii... As it happens, Nininger's grandson is a meteorite researcher at the University of Hawaii, and one of Costinos' Antarctic companions was a UH grad student! Throughout the book, the author attempts to tell a parallel story of a personal nature along with the meteorite tales, but this is largely ineffective. Ignoring this transgression, the meteorite stories are fun to read and overall I enjoy and can recommend this book.

MOON PHASES

New Moon *First Quarter* *Full Moon* *Last Quarter*
Aug 6 **Aug 14** **Aug 21** **Aug 28**

Shower	Activity	Max Date	λ 2000	Radiant α	δ	V_{∞} km/s	r	ZHR
Perseids (PER)	7/17 - 8/24	Aug 12	140°	48°	+58°	59	2.2	100
κ -Cygnids (KCG)	8/3 - 8/25	Aug 17	145°	286°	+59°	25	3.0	3

Enjoy viewing (and reading) about meteors this month!
 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

- Aug 3, 12h, M 4.0° S of Jupiter**
(33° from sun in morning sky)
- Aug 3, 21h, Moon 5.2° SSW of Mars**
(28° from the sun in morning sky)
- Aug 4, 19h, M 4.3° SSW of Mercury**
(19° from sun in morning sky)
- Aug 9, 13h, M 4.8° SSW of Venus**
(35° from sun in evening sky)
- Aug 12, 13h, M 3.0° SW of Saturn**
(74° from sun in evening sky)
- Aug 21, 2h, M 5.3° NNW of Neptune**
(173° from sun in midnight sky)
- Aug 23, 17h, M 3.2° NNW of Uranus**
(139° from sun in morning sky)
- Aug 31, 7h, M 4.5° S of Jupiter**
(54° from sun in morning sky)

Other Events of Interest

Times are Hawaii Standard Time

- Aug 6, 07h, 3 Juno at opposition**
- Aug 6, 11:50h, Moon new**
- Aug 12, Perseid Meteors**
(Favorable year for this major shower)
- Aug 24, 11h, Mercury at superior conj with sun** (Passes into evening sky)
- Aug 20h, 15:44h, Moon full**
- Aug 26, 16h, Neptune at opposition**

<p> Mercury</p> <p>Mercury is visible in the morning twilight during the first few days of August.</p>	<p> Venus</p> <p>Shines brightly low in the west after sunset.</p>	<p> Mars</p> <p>Visible in the morning sky before sunrise at a magnitude of about +1.4.</p>
<p> Jupiter</p> <p>Jupiter is bright in the morning sky just above Mars.</p>	<p> Saturn</p> <p>Saturn is in the southwest at sunset and well placed for viewing in the early evening hours.</p>	<p> Uranus</p> <p>Rises before midnight and can be viewed in the morning sky.</p>
<p> Neptune</p> <p>Reaches opposition this month and is in the sky all night. Best observed near midnight.</p>	<p> Dwarf Planet Pluto</p> <p>Reached opposition on July 1 - so now one of the best months to try to view this elusive dwarf planet. Late evening is the best time.</p>	<p> Asteroid 3 Juno</p> <p>Reaches opposition on Aug 6.. It is in Aquarius and is rather dim, magnitude about +8.9.</p>

atmosphere. One fireball every few hours is not unusual. Fireballs become more numerous, however, when Earth is passing through the debris stream of a comet. That's what will happen this August.

The Perseid meteor shower comes from Comet Swift-Tuttle. Every year in early- to mid-August, Earth passes through a cloud of dust sputtered off the comet as it approaches the sun. Perseid meteoroids hitting our atmosphere at 132,000 mph produce an annual light show that is a favorite of many backyard sky watchers.

Cooke thinks the Perseids are rich in fireballs because of the size of the parent comet. "Comet Swift-Tuttle has a huge nucleus--about 26 km in diameter," comments Cooke. "Most other comets are much smaller, with nuclei only a few kilometers across. As a result, Comet Swift-Tuttle produces a large number of meteoroids, many of which are large enough to produce fireballs."

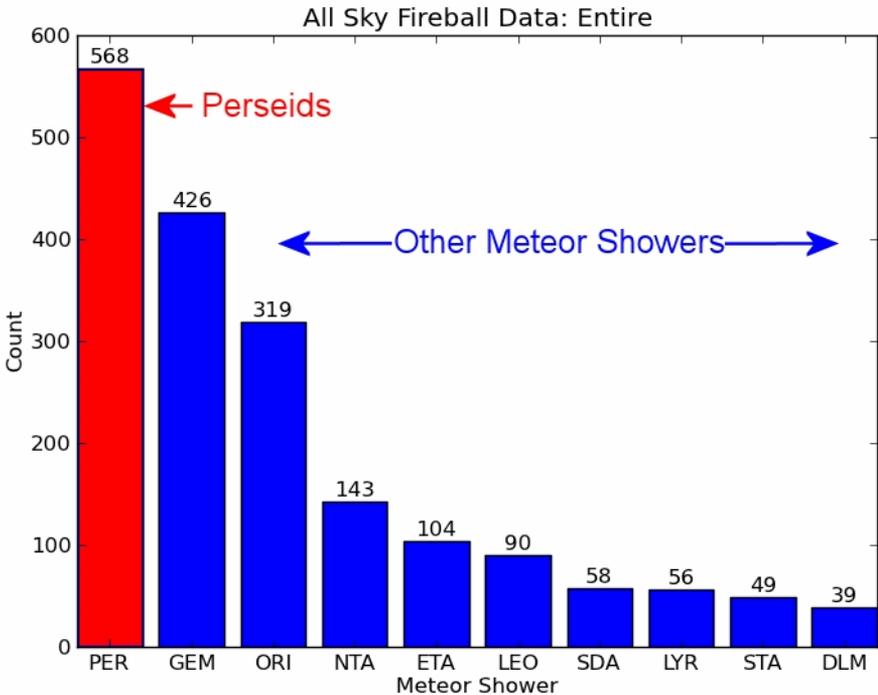
Cooke recommends looking on the nights of August 12th and 13th between the hours of 10:30 PM to 4:30 AM local time. Before midnight the meteor rate will start out low, then increase as the night wears on, peaking before sunrise when the constellation Perseus is high in the sky.

For every fireball that streaks out of Perseus, there will be dozens more ordinary meteors.

"Get away from city lights," advises Cooke. "While fireballs can be seen from urban areas, the much greater number of faint Perseids is visible only from the countryside."

In total, the Perseid meteor rate from dark-sky sites could top 100 per hour.

That's a lot of magic. Enjoy the show. ☆



Hawaiian Astronomical Society

Event Calendar

List View		Past Events		< August 2013 >		Upcoming Events		Add/Log Event	
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday			
28	29	30	31	1	2	3	6:40 PM Club Star Party (D)		
							Sunset: 7:10 PM		
4	5	6	7	8	9	10	7:30 PM Club Meeting 6:30 PM Public Star Party (G) 6:30 PM Public Star Party (K)		
							Sunset: 7:06 PM		
11	12	13	14	15	16	17			
							Sunset: 7:01 PM		
18	19	20	21	22	23	24			
							Sunset: 6:55 PM		
25	26	27	28	29	30	31	6:10 PM Club Star Party (D)		
							Sunset: 6:49 PM		

The new school year is beginning and HAS (and the schools) can use your help! Consider volunteering your time for good cause--the kids and the Club can use whatever time and effort you can contribute!

☆ ☆ Upcoming School Star Parties ☆ ☆

Fri.	9/06	Lehua Elementary (Pearl City)
Fri.	9/16	Palolo Elementary (Honolulu)
Fri.	10/11	Mililani Uka Elementary (Mililani)
Fri.	10/11	Niu Valley Middle (Honolulu)

(Space Place continued from page 4)

discovery: rather than collecting vast amounts of light through a giant aperture, you could collect it over time, through the newly developed technology of photography. During the latter half of the 19th Century, the application of photography to astronomy allowed us to better understand the Sun's corona, the spectra of stars, and to discover stellar and nebulous features too faint to be seen with the human eye.

Working initially with a 7-inch refractor that was later upgraded to a 20-inch reflector, amateur astronomer Isaac Roberts pioneered a number of astrophotography techniques in the early 1880s, including "piggybacking," where his camera/lens system was attached to a larger, equatorially-mounted guide scope, allowing for longer exposure times than ever before. By mounting photographic plates directly at the reflector's prime focus, he was able to completely avoid the light-loss inherent with secondary mirrors. His first photographs were displayed in 1886, showing vast extensions to the known reaches of nebulosity in the Pleiades star cluster and the Orion Nebula.

But his greatest achievement was this 1888 photograph of the Great Nebula in Andromeda, which we now know to be the first-ever photograph of another galaxy, and the first spiral ever discovered that was oriented closer to edge-on (as opposed to face-on) with respect to us. Over a century later, Andromeda looks practically identical, a testament to the tremendous scales involved when considering galaxies. If you can photograph it, you'll see for yourself!

Astrophotography has come a long way, as apparent in the Space Place collection of NASA stars and galaxies posters at <http://spaceplace.nasa.gov/posters/#stars>. ☆

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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

HISTORICAL VIEWS ON MAUNA KEA: FROM THE VANTAGE POINTS OF HAWAIIAN CULTURE AND ASTRONOMICAL RESEARCH

‘IMILOA—ASSESSING THE IMPACT

Ka'iu Kimura, 'Imiloa's newly appointed Executive Director, was involved with the Center since its formative years as exhibits coordinator. Although no formal evaluation has been conducted yet to assess the success of 'Imiloa, Kimura is still able to cite anecdotal evidence supporting the positive impact already made by this facility five years after its opening.

She already senses a growth in the community's trust level. Suspicion over hidden agendas and backroom decisions is diminishing. People are even willing to broach the issues with her at supermarkets and other local shops. Kimura feels that 'Imiloa provides a safe, informal, non-confrontational venue for people to gather and air their differences; and this is proving more fruitful than the contentious atmosphere felt at adversarial public meetings.

Kimura believes that the community sees the new Master Plan as providing concessions to protecting the mountain, the culture and the environment. With the plan's explicit support of 'Imiloa, the community now appears more reassured of receiving direct benefits. Having been included in 'Imiloa's construction and staffing, the community also views itself to be a genuine stakeholder and integrally involved in 'Imiloa's operation. Kimura believes that by specializing in informal educational opportunities 'Imiloa is better positioned to create ties to the community than the observatories can.

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

Initial Balance:	\$4,546.46
<i>Receipts:</i>	
Donations	30.00
Dues Received	124.00
Magazine Payment	68.00
Total Income:	\$222.00
<i>Expenses:</i>	
Astronews (2 months)	284.34
Excise Tax	1.80
Magazine Subscriptions	132.85
Mailing Labels	27.74
Postage	2.52
Total Expenses:	\$449.25
Final Balance	\$4,319.21

The club gained three new members this month. They are *Don Poole, Cynthia Lee and Martin Dunsmuir*. Thank you to *Hiromi Hoguchi and Robert Humphreys* for their donations. Come join us for some wonderful summertime viewing.



<<Upcoming Star Parties>>

- Public Party-Dillingham (no public)***
- Kahala/Ewa Party Aug 10**
- Club Only-Dillingham Aug 3 & 31**

****note: NO Public Dillingham Party this month***

Kimura notes that ‘Imiloa is playing a major role in facilitating dialog over the proposed Thirty Meter Telescope (TMT), slated as the world’s most advanced optical/infrared observatory. At one of the TMT’s presentation to the Hawaiian community, a resident remarked that “the (Hawaiian) culture was here before, and the culture will be here after. We need to look at today,” underscoring in her comments the need for jobs and economic development for the island.

he proposed site for the TMT observatory and its 18,000-square-foot support facility is approximately a half-mile from the summit and 500 feet below the existing base of the existing telescopes. This location was selected for its reduced impact on the surrounding natural habitats and archaeological sites as well as its outstanding observing conditions. Coupled with an advanced adaptive optics system, the TMT’s 30-meter (98-foot) diameter mirror will yield a resolution 12 times sharper than that of the Hubble Space Telescope. The TMT Observatory Corporation is a non-profit entity operated in partnership by Caltech, the University of California, the Association of Canadian Universities for Research in Astronomy, and the National Astronomical Observatories of Japan, China and India.

In February 2011, the Board of Land and Natural Resources (BLNR) of Hawai‘i’s Department of Land and Natural Resources (DLNR) unanimously approved a Conservation District Use Permit to the University of Hawai‘i to build and operate the TMT on Mauna Kea. Over 30 native Hawaiians, teachers and students had testified at the public hearing prior to the vote, with testimonies divided equally between those for and against this observatory. The BLNR also granted the opponents’ request for a contested case hearing, providing one final opportunity to make their case before a hearing officer. This hearing is expected to be concluded within six months.

Some argue that the TMT would constitute the fourteenth observatory on the summit, in violation of the limit of 13 set in the 1983 Mauna Kea Complex Development Plan. However, in its staff report to the DLNR on the TMT’s Conservation District Use Application, the DLNR Office of Conservation and Coast Lands (OCCL) stated:

... the BLNR has never established a limit on telescope development and OCCL is not aware of any carrying capacity study that would support this claim. UH-internal planning documents such as the 1983 Mauna Kea Complex Development Plan did limit the number of observatories to 13 under that plan, but we have not necessarily viewed that figure as a maximum limit or a carrying capacity.

The OCCL also noted that the Caltech Submillimeter Observatory is expected to be decommissioned before the TMT would become operational, keeping the total number of telescopes on Mauna Kea at thirteen.

Furthermore, projections over the next decade forecast that this total may actually decrease to ten.

Several labor union representatives also testified in favor of this project. At a projected cost of \$1.3 billion, the TMT is anticipated to contribute substantially to the island’s languishing construction industry and create 140 permanent jobs upon completion. The TMT has also committed itself to donating \$1 million annually to the community to be used for locally chosen education programs and scholarships.

According to Sandra Dawson, TMT’s Manager of Hawaii Community Affairs, the TMT is continuing to working closely with the ‘Imiloa Astronomy Center. Besides developing cultural awareness training for TMT personnel and contractors, they are also discussing collaborations on projects that will strengthen the links between culture and science, particularly astronomy.

If the final contested hearing finds in favor of the TMT, officials at TMT indicate that, pending funds, construction could start in early 2012 and be completed by 2020. ☆

(To Be Continued)

Hawaiian Astronomical Society

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Hawaiian Astronomical So... Timeline Recent

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Hawaiian Astronomical Society

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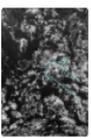
Update Page Info

Like

Organization

This page will post info about Oahu's astronomy club, including current events, member interests/activities and star party reports. Astro-photos welcome!

About



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Highlights

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Who Do You LIKE?

Have you checked out the HAS Facebook page yet? This is your chance to participate and learn more about the club, especially if you are not able to get to every meeting and star party.

Connect with other members and non-members interested in astronomy, including those directly involved with research!

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