The Astronews

HUI KILOLANI

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Turkish Delight

— John Sandor

It was Tuesday, March 28, the day before the eclipse, and we were exploring the Roman ruins of the ancient city that was soon to be engulfed in the moon's dark shadow, turning midday to night.

"This area is closed. You can't come in. We've reserved this whole section for our staging crew" the woman with the walkie-talkie said, surprisingly in plain American English. After several days of being addressed by the locals in German (the vast majority of tourists to this part of Turkey were Germans) it was a surprise to hear English again. We had come to the Mediterranean coastal town of Side in Turkey to view the total solar eclipse, as it turned out, with about 60,000 other tourists instead of the few dozen I had envisioned when I first planned our trip. The guidebooks I had used were less than five years old, but had painted Side as a small

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Upcoming Star Parties

Club Party	**Feb 10**	**Dillingham**
Public Party	**Feb 17**	**Dillingham**
Public Party	**Feb 24**	**Kahala/Waikele**
Public Party	**Mar 10**	**Dillingham**
Club Party	**Mar 17**	**Dillingham**
Public Party	**Mar 24**	**Kahala/Waikele**
	Apr 21	**Astronomy Day**

Upcoming Events:

- The next meeting is at 7:30 p.m. on **Tuesday, Feb. 6th** at the Bishop Museum.
- Bishop Museum's next planetarium show with **Barry Peckham** is Friday, **Feb. 2nd** at 7:00 pm.

President's Message

Almost all the objects in our night sky are moving at great speeds relative to the Earth, yet their distance from us makes it appear that they are immobile. Even through a telescope, few objects look different from night to night or over a lifetime. The Andromeda galaxy doesn't look any bigger than it did last time, even though it gets hundreds of kilometers closer every second.

A few objects, though, are close enough and change fast enough that they are different each time we look at them. Among these, some of the planets hold a special place because they are familiar, yet always a little different.

Jupiter's atmosphere is constantly changing. While the Great Red Spot has existed since telescopes could first reveal it nearly 400 years ago, it changes its appearance as the months and years go by. Now it has a smaller companion that is being called "Red Jr." No one knows how long that will last.

While we can see global-scale changes on Jupiter even with amateur telescopes, it has been a while since a spacecraft passed close enough to reveal the smaller details that no telescope on (or in orbit around) Earth can discern. That is about to change. The New Horizons mission to Pluto and the Kuiper Belt will fly past Jupiter in February. New Horizons is using Jupiter for a gravity-assisted boost in velocity to shorten its travel time to Pluto, and it will observe Jupiter as a test of its instruments before it hibernates for a few years on its long journey to Pluto.

Most of the images will be obtained before its closest approach to Jupiter on February 28th, but other observations will continue until June as it spends months in Jupiter's magneto tail. This will be our first

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Hawaiian Astronomical Society
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Observer's Notebook—February 2007 by Jay Wrathall

Planets Close To the Moon

Times are Hawaii Standard Time

Feb 2, 14h, M 0.84º NNE of Saturn
(177º from sun in midnight sky)
Feb 11, 23h, M 6.0º S of Jupiter
(68º from sun in morning sky)
Feb 14, 17h, M 3.5º SSE of Mars
(34º from sun in morning sky)
Feb 19, 06h, M 2.2º NNW of Venus
(27º from sun in evening sky)

Mercury, Uranus and Neptune are closer than 15º from the sun when near the moon in February.

Other Events of Interest

Times are Hawaii Standard Time

Feb 1, 19:45h, Moon Full
Feb 4, 13h, Mercury 6.3º W of Venus
(18º and 24º from sun in evening sky)
Feb 7, 08h, Mercury at greatest elongation
(18.2º East of the sun in evening sky.)
Feb 7, 10h, Venus 0.67º SSE of Uranus
(25º from sun in evening sky)
Feb 8, 06h, Neptune at conjunction with sun
(Passes into morning sky)
Feb 10, 08h, Saturn at opposition
Feb 17, 06:14h, Moon New
Feb 22, 19h, Mercury at inferior conj. with sun
(Passes into morning sky)

Planets in February

Mercury is visible low in the western sky after sunset during the first half of the month.	**Venus** shines brightly in the western evening sky at Mag. -4.0. Sets about 2 ½ hours after the sun.	**Mars** rises a couple of hours before sunrise at magnitude +1.4. Still way to small to view any detail.
Jupiter shines brightly in the morning sky at magnitude -2.0.	**Saturn** reaches opposition 0n February 10, so is in the sky all night. Best observed in the late evening.	**Uranus** is getting too close to the sun for easy viewing. Look for it very close to Venus on February 7.
Neptune is at conjunction with the sun on February 8 and cannot be viewed this month.	Dwarf Planet **Pluto** rises about 3:00 am and can be viewed just before dawn in the eastern sky.	Dwarf Planet **Ceres** is too close to the sun to be viewed in February.

Meeting Minutes

H.A.S. Secretary

President Chris Peterson called the January 2, 2007 meeting, of the Hawaiian Astronomical Society, to order at 7:40 p.m. The meeting was held at the Atherton Halau of the Bishop Museum. In attendance were 29 members and one visitor, Cristine Kaleikini.

OLD BUSINESS

Pres. Peterson spoke briefly regarding current astronomy news items:
Chris listed upcoming events for 2007.
April 3rd – the Hawaii State Science and Technology Fair.
April 21st – Astronomy Day
April 29th – IFA Open House
October (date not yet identified) – Astronaut Lacy Veach Day
Chris again urged members, who may want to view the skies but who have no personal telescopes to come out to our suburban star parties at Kahala and Waikele as well as the dark sky star parties. We would like to partner those with scope with those who would like to participate more. This increase involvement will bring our group closer together and foster participation within the club.

★Hawaii Space Lecture Series- The Hawaii Space Lecture does not have a lecture scheduled for the month of January 2007. However, the University of Hawaii will present a lecture in January 22nd, at the U.H. Manoa Art Auditorium. The topic under discussion will be "Killer Asteroids." Speakers will be Dr. David Tholen, Dr. Robert Jedicke, Dr. Nick Kaiser and U.S. Astronaut Ed Lu.

★Star Party Report - We have no school star parties scheduled for the months of January or February 2007.

★Guest Speaker –This month the members of the Hawaiian Astronomical Society had the pleasure of hearing a speaker from the Institute for Astronomy, at the University of Hawaii. Dr. Gareth Wynn-Williams gave a presentation on the Greek "Antikythera Mechanism." The bronze devise were recovered from an ocean wreck in the Mediterranean Sea in 1901. Recent insights into the workings of the ancient Greek mechanical devise have caused scientists to begin rethinking the technology of Ancient Greece. The recovered bronze pieces are inscribed in Greek. Although the purpose of the mechanism is still somewhat unclear, a partial reconstruction of the mechanism, based on X-ray tomography has been completed. The mechanism appears to have been driven by a series of finely crafted gears. Computer animations of the possible gear movements seem to indicate that the mechanism was capable of predicting solar eclipses.
Gareth discussed much more than can be recounted here. Needless to say Dr. Wynn-Williams's talk fired the imagination of everyone in attendance. The beautifully crafted, hand cranked mechanism would have been a wonder in any time.

★Back with Us- Chris acknowledged the presence of Peter Besenbruk, HAS Webmaster and long-time member. Big Island resident and long-time member, Mike Morrow was in town and also joined us.

★Jim Bedient – Jim Bedient spoke briefly his recent mainland excursion to the East Coast. Jim, who is well known for his fascination with vari-

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Meteor Log—February 2007 by Mike

February is a month of normally weak showers and the year's lowest sporatic rates in the Northern Hemisphere. Fireball-class sporadics sometimes loosely "cluster". This year the full Moon prevents checking for any minor showers for the first ten days of the month. That is about it for this month.

If you are interested in observing meteors
contact Tom Giguere on Oahu at 672-6677 or write to:
Mike Morrow, P.O. Box 6692, Ocean View, Hawaii 96737

Minutes *(Continued from page 4)*

able stars, spent his recent vacation in Boston Massachusetts, at the Harvard College Observatory. Jim prowled the halls of the plate stacks where thousands of photographic glass plates are stored and archived. Jim presented a short photographic tour of the facility and discussed his work at the HOS. Jim related to the HAS members of the impending dataization (sic) of the library of photographic glass plates.

★Jim Bedient's own research and discovery of a variable star in the constellation of Cygnus has been reported up in the magazine *Sky & Telescope*.

President *(Continued from page 2)*

close look at Jupiter since the Galileo mission ended in 2003, and our last until at least 2016, when the Juno mission is scheduled to arrive at Jupiter, so get ready for a rare treat!

Chris

★The meeting was adjourned at 9:07 p.m. and refreshments were served.

Respectfully Submitted,
Gretchen West

Turkish Delight *(Continued from page 1)*

village, not the version of booming Gold Coast resort megalopolis that we found, illustrating the meteoric pace of modern development.

I had chosen the Roman ruins of Side for our viewing site for several reasons: Being close to the center line of the eclipse meant that we could spend the maximum amount of time possible in the phase of totality. And for the drama to be amongst the architecture of antiquity while witnessing a celestial event that had been a spectacle of foreboding and fear to ancient civilizations. There were also several nearby roads leading inland along the eclipse path, in the case we had to make a last minute escape from any coastal clouds or fog hanging around; fortunately there was none. For probably the same reasons, NASA and The Exploratorium from San Francisco chose the same site to broadcast a live Internet feed of the entire eclipse, from the well-preserved Roman amphitheater there.

We considered viewing from the amphitheater as well, but realized that we would have a limited view of the horizon from there, and wanted a more panoramic view of our first eclipse. I am not sure we could have gone into the amphitheater during the eclipse anyway, as from a distance it appeared to be filled with Turkish students in school uniforms who were part of the

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Yahoo Group for HAS Members

Carey Johnson

I have created a new Yahoo Group for HAS Members. It is located at http://tech.groups.yahoo.com/group/HawaiianAstronomicalSociety/

What is a Yahoo Group? It's where people with a shared interest meet, get to know each other, and stay informed. It gives you instant access to shared message archives, photos, group event calendars, and links. Yahoo Groups is a free service that allows you to communicate through a web site and email group. There are millions of groups based on different interests, including hundreds of Astronomy Clubs around the world.

Once you join the Yahoo Group there are a couple of ways to receive and view messages. The most popular way is to have the individual messages sent to your e-mail address. This is the most efficient way to keep up with the latest goings on in the club, and also allows you to respond to a message by simply replying to the e-mail. If you don't want to receive the messages by e-mail you can simply go to the website and read the message archive. Or there is another option to receive a Daily Digest, where all the messages from one day are sent in one e-mail.

At the website for our Yahoo Group there are useful Web Tools that can be found in the left column; Messages, Post, Files, Photos, Links, Database, Polls, Members, and Calendar.

Messages: where you would go to read the message archives instead of reading it from your e-mail or to look up an old message that you've deleted. There's even a search engine to find a particular message.

Post: where you would go to post a message from the website instead of from your e-mail. All messages posted from here or from e-mail are sent to every member of the Yahoo Group.

Files: where you can store any kind of file for the rest of the members to see.

Photos: where you can post pictures and organize them into folders. Yahoo automatically makes a thumbnail, medium and large version of the posted photo.

Links: where you can post the link to a website that might be useful or interesting to the rest of the members.

Database: where you can create tables. I've never seen this feature used.

Polls: where you can create a poll to get the opinion of the membership.

Members: shows all of the members of the Group. The information here is only viewable by the members of the Group. The information viewable can be as vague or complete as you want based on the info you give when filling out your Yahoo ID.

Calendar: my favorite feature. Here you can enter Astronomical Events, Moon phases, Star Parties, etc… Events can be entered by any member of the Group. You can also set up reminders that automatically send out a message to remind the members of the upcoming event. You can set 2 reminders and they can be anywhere from 15 minutes to 14 days in advance.

To Join simply go to http://tech.groups.yahoo.com/group/HawaiianAstronomicalSociety/ and click on Join This Group. If you already have a Yahoo ID and Password enter it there. If you don't have a Ya-

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Turkssh Delight *(Continued from page 5)*
staged audience for NASA's eclipse broadcast.

On eclipse day, we awoke before sunrise and walked outside to see the sun rise above the snowcapped mountains behind the coastal plains of Anatolia (the name for the Asian mainland of Turkey). There were some high clouds along the tops of the mountains which created a dramatic sunrise, but otherwise the sky was completely clear. A very good omen!

Next to the sun, the disc of the moon was standing by invisibly; it would be another five hours until it revealed its presence. We left our hotel at 8am. After our scope-out visit the day before, Joanne was fearful that we would not be able to park anywhere near the ruins unless we got there early enough. When we arrived, there was only one other car in the large parking lot at the outer edge of the ruins, and the only people we saw were a group of three eclipse tourists sitting at an outdoor cafe adjoining the lot.

We sat down at the cafe and had ourselves some fresh-squeezed orange juice and wrote postcards. The area around Side is known for its orange groves, and we were at peak harvest season, judging by the large number of roadside orange stands we came across. "You just missed the pomegranate season," the cafe owner told us, so I felt bad about skipping the glass of fresh pomegranate juice I could have had from the street vendors in Istanbul. In fact, *Side* meant pomegranate in the old local Pamphylian language.

We headed out on the sandy paths around the perimeter of the ruins. Along the southern perimeter, on the beach access road, there were already dozens of eclipse chasers setting up their scopes and cameras. Someone had dug an image of the solar corona with the title ***SOLAR ECLIPSE 2006*** into the sand below a shallow cliff, which would have made a nice picture if I'd had a wide-angled camera lens. We wandered through the remains of the colonnades, agoras, defensive walls, houses, baths, and temples of the ancient city, and wound up in the modern tourist-shop marketplace where we bought one of several kilos of *Turkish delight* (a candy)! that we would buy during our trip: this one with pistachios almonds and pomegranate. We also bought a large beach blanket that would be put to use at our viewing site.

We had packed a picnic lunch, so we found a shady refuge inside the shell of a Roman hospital and ate our sandwiches while we watched a portable DVD with our noise-cancelling headphones (OK, we brought too much stuff). People wandered by us and probably thought we were watching a live Internet broadcast or something of scientific interest rather than the episode of *The Sopranos* we had brought along.

It was close to noon, and now the crowds were getting larger. We could see the inside of the amphitheater in the distance and it was beginning to fill with the gray and white uniformed students. We chose a sand dune that was fairly near the center of the ruins, tall enough to have nearly a 360-degree view of the ocean, ancient buildings, and surrounding plains and mountains. We spread our towel on the slope of the dune, and I went to

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NASA's Space Place

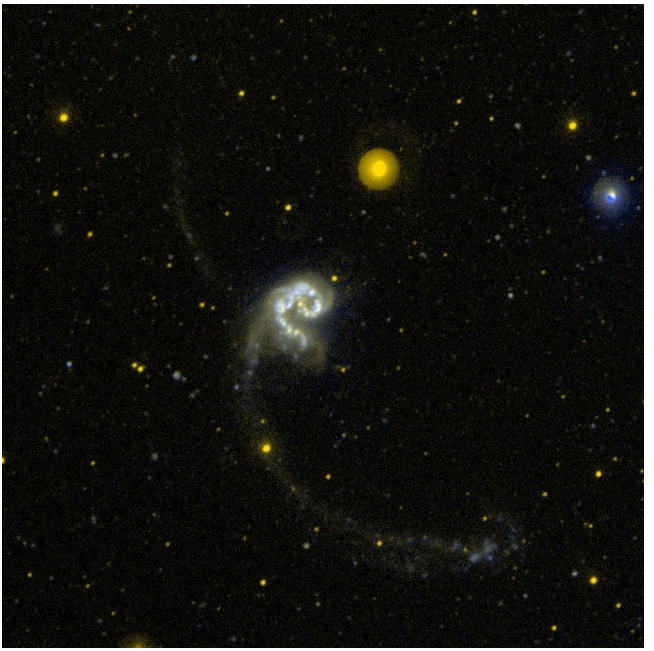
A Great Big Wreck

by Dr. Tony Phillips

People worry about asteroids. Being hit by a space rock can really ruin your day. But that's nothing. How would you like to be hit by a whole galaxy?

It could happen. Astronomers have long known that the Andromeda Galaxy is on a collision course with the Milky Way. In about 3 billion years, the two great star systems will crash together. Earth will be in the middle of the biggest wreck in our part of the Universe.

Astronomer John Hibbard isn't worried. "Galaxy collisions aren't so bad," he says. A typical spiral galaxy contains a hundred billion stars, yet when two such behemoths run into each other "very few stars collide. The stars are like pin-pricks with lots of space between them. The chance of a direct hit, star vs. star, is very low."



This GALEX UV image of the colliding Antennae Galaxies shows areas of active star formation, which is not in the tidal tails as one expects.

Hibbard knows because he studies colliding galaxies, particularly a nearby pair called the Antennae. "The two galaxies of the Antennae system are about the same size and type as Andromeda and the Milky Way." He believes that the Antennae are giving us a preview of what's going to happen to our own galaxy.

The Antennae get their name from two vast streamers of stars that resemble the feelers on top of an insect's head. These streamers, called "tidal tails," are created by gravitational forces—one galaxy pulling stars from the other. The tails appear to be scenes of incredible violence.

But looks can be deceiving: "Actually, the tails are quiet places," says Hibbard. "They're the peaceful suburbs of the Antennae." He came to this conclusion using data from GALEX, an ultraviolet space telescope launched by NASA in 2003.

The true violence of colliding galaxies is star formation. While individual stars rarely collide, vast

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interstellar clouds of gas do smash together. These clouds collapse. Gravity pulls the infalling gas into denser knots until, finally, new stars are born. Young stars are difficult to be around. They emit intensely unpleasant radiation and tend to "go supernova."

GALEX can pinpoint hot young stars by the UV radiation they emit and, in combination with other data, measure the rate of star birth. "Surprisingly," Hibbard says, "star formation rates are low in the tidal tails, several times lower than what we experience here in the Milky Way." The merging cores of the Antennae, on the other hand, are sizzling with new stars, ready to explode.

So what should you do when your galaxy collides? A tip from GALEX: head for the tails.

To see more GALEX images, visit www.galex.caltech.edu. Kids can read about galaxies and how a telescope can be a time machine at spaceplace.nasa.gov/en/educators/galex_puzzles.pdf.

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

Turkish Delight *(Continued from page 7)*
check out some of the setups. I found a couple from Sweden with a 3" refractor and solar filter. There were three nice sunspots they were viewing. Clusters of small viewing groups and families surrounded us, and the number of voices I overheard was like being in the lobby of the United Nations.

At around 12:40, the people with cameras got more active, and then at 12:45 the excited murmurs of first contact were heard, and we glimpsed the disc of the phantom moon taking its first bite from the Southwest limb of the sun. For the next hour and a quarter, we used our solar peeps to view the shrinking crescent of the sun's disk. We saw miniature crescents projected on the white sand beneath the scrub bushes on the dunes, and took photographs of them on pieces of paper and cardboard. About five minutes before totality the strength of the sunshine grew weaker, with the feeling of later afternoon. The air grew cooler, and the crowd became more excited. Our shadows, which had been sharp and harsh in the midday sun became soft and blurred around the edges. Most of the people at that point were staring at the sun with their solar glasses on, reminding me of being at an Imax 3D movie house.

I tried to keep one eye on the sun and one eye on the horizon, with my side vision trying to catch a glimpse of the *shadow bands* on the ground and the racing advancement from the southwest of the moon's umbral shadow. At the very last sliver of crescent, the actual movement of the moon against the sun could be appreciated, as the two ends of the glowing crescent appeared to grow towards each other until they finally vanished in a flash of bright light: the diamond ring. Cheers, screams, applause and whistles followed. Suddenly, it was a circular sunset all around the horizon. A

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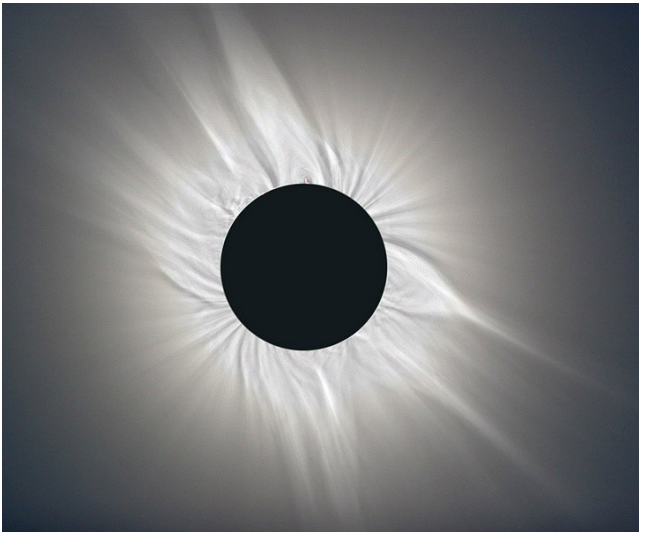

bright point of light appeared to brighten in the Southwest, which looked at first like an Iridium flare, but of course turned out to be Venus.

Two small fingers of red flames briefly projected off the ring of light until they were swallowed by the advancing moon. As our eyes adjusted, the diamond ring turned into a glorious delicate blue-green corona, surrounding an eerie black hole in the sky that felt as if it would pull us in. The corona looked alive, the dynamo powering the giant magnet lived somewhere in that perfect black circle, creating the feathery plumes and arcs we all have seen in our first grade science classes with sprinklings of iron filings on construction paper. Birds did in fact come back to the shrubbery to roost.

Three minutes and 42 seconds later, the process reversed itself. To cheers and applause again, the diamond ring reappeared. It was a celestial spotlight illuminating the people and buildings around us, like being on a giant stage, in muted colors just off of black and white. As the sunset receded from the South and bright daylight returned, the dark shadows over the clouds and mountains to the North could still be seen.

Soon, full daylight returned all around, but the power of the sun took another hour to reach the pre-eclipse warmth. Minutes after the end of totality, the majority of people began to pack up. The stadium emptied. A few diehards and their cameras continued to take pictures of the receding eclipse. We laid back on our beach towel and watched the sun with our solar peeps until the very last edge of the moon retreated from the sun's face. To do less would be insulting to the performers of our spectacle, no

You can view the rebroadcast of the eclipse as seen from the Roman amphitheater at Side: http://www.exploratorium.edu/eclipse/2006

I was amused by a couple of things said in the Exploratorium's broadcast. One moderator said that it was his seventh total eclipse, and although we were at solar sunspot minimum, this was the best corona he had ever seen! We were very lucky. The moderators also mentioned that “it never got dark enough to see the planets.” Well, they were standing in the middle of a stadium, and Venus was too low on the horizon for them to see over the stands. Hello?!

Treasurer's Report

by Jim MacDonald

HAS Financial Report as of December 15, 2006

Initial Balance:	**$4,224.53**
Receipts:	
Donations	199.00
Dues Received	363.00
S&T Payments	131.80
Astronomy Payments	102.00
Bumper Sticker Sales	3.00
Total Income:	**$798.80**
Expenses:	
Astronews	80.12
Magazine Subscriptions	166.85
Postage	3.27
Refreshments	22.87
Total Expenses:	**$273.11**
Ending Balance:	**$4,750.22**

This month the club's membership remained unchanged. A special thanks to **Gretchen West**, **Wilfred** and **Helen Kekoanui**, **Jean** and **Toshio Taniguchi**, **Yoshiyuki Inoue**, **Jeffrey Schmidt**, and **Diane Kellett** for their very generous donations. A thank you is also in order to all renewing their membership this month. Clear skies to all!

Yahoo Group *(Continued from page 6)*

Carey Johnson

hoo ID, click on Sign Up. It's free. If you have any problems or questions I can be reached at quarkcsj@hotmail.com.

Join the

Friends of the Institute for Astronomy (FIfA)

As a "Friend" you can be directly involved in the mission of the University of Hawaii's Institute for Astronomy. You will be invited to meet with IfA and visiting scientists, attend star parties and other activities. You will also receive quarterly newsletters and invitations to special events at the IfA. For more information and an application form go to www.ifa.hawaii.edu/friends

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HAS Member Robert Kesler captured an early morning conjunction of Venus, Mars and Mercury on Dec 10.