

Inside this issue:

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for sale by HAS member Clare Levin.
All items are in very good condition.

TeleVue 27mm Panoptic - \$250

TeleVue 9mm Nagler (Type 1) (old) - \$85

TeleVue 16mm Nagler (Type 2) - \$150

TeleVue 13mm Ethos - \$450

TeleVue 35mm Panoptic - \$350

Z Bolt Green Laser, Astro 10, like new
in box (make offer)

Hotech laser collimator - \$150

2" variable polarizer - \$100

Lumicon UHC filter, 1 1/4" - \$50

Lumicon OIII filter, 1 1/4" - \$75

Lumicon OIII filter, 2" - \$140

Lumicon illuminated pen w/ button batteries - \$20

Sirius Optics planetary contrast filter, 1 1/4" - \$30

email : barry@liteboxtelescopes.com

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Upcoming Events:

The next meeting is on Tuesday, August 2nd at the Bishop Museum 7:30 PM.

- Bishop Museum's planetarium shows are every Saturday of the month at 8:00 PM www.bishopmuseum.org/calendar
- The next Board meeting is Sun., July. 31st 3:30 PM in POST building at UH.

President's Message August 2016

I took my telescope to a party by the ocean in Hawaii Kai on July 17th. It was a nearly full Moon night. The worst time for astronomy, as we all know, right? Well, there are some things that you can observe on the Moon when it's nearly full that you can't do (in the early evening) otherwise. (The brighter planets look nearly as good then, too, unless they're very close to the Moon.)

I use those opportunities to observe the Aristarchus Plateau. It's about 50 degrees west of the central meridian. Aristarchus crater is very bright. Surrounded as it is by the dark lavas of Oceanus Procellarum, it's an easy landmark to find. Aristarchus and another crater, Herodotus - older and darker, its floor flooded with lava - are on the southern edge of the raised plateau. Starting north of Herodotus, Schroter's Valley, the longest sinuous rille on the Moon, winds from the "Cobra Head" at its top down through the plateau.

Future settlers on the Moon may find many resources there. Schroter's Valley was probably carved by flowing lava erupted from the Cobra Head. The lack of atmosphere and low gravity allowed the lava, some of it erupted in a fire fountain such as we see at Kilauea, to break into small droplets that cooled enough to solidify before landing back on the plateau. Much of the plateau is covered by several meters of this very fine pyroclastic ash.

This is a resource with several potential uses. First, it is easily moved. A trench could be dug and a habitation module placed into it. The module could then be covered with a few meters of ash. That would protect the inhabitants from solar and cosmic radiation.

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The Astronews is the 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 e-mail. The deadline is the 15th of each month. We are not responsible for unsolicited artwork.

Planets Close To the Moon

Times are Hawaii Standard Time

Aug 3, 19h, M 2.8° SSW of Venus
(16° from sun in evening sky)
Aug 4, 12h, M 0.54° NNE of Mercury
(25° from sun in evening sky)
Aug 5, 17h, M 0.22° SW of Jupiter
(39° from sun in evening sky)
Aug 11, 15, M 8.0° W of Mars
(104° from sun in evening sky)
Aug 12, 01h, M 3.6° N of Saturn
(109° from sun in morning sky)
Aug 10, 01, M 1.0° NNW of Neptune
(166° from sun in morning sky)
Aug 22, 01h, M 2.9° SSE of Uranus
(126° from sun in morning sky)

Other Events of Interest

Times are Hawaii Standard Time

Aug 2, 10:45h, New Moon
Aug 12, Perseid Meteors
Aug 16, 11h, Mercury at greatest elongation
(27.4° East of the sun in evening sky)
Aug 17, 23:27h, Full Moon
Aug 19, 20h Asteroid 2 Pallas at Opposition
Aug 19, 20h, Mercury 3.8° SW of Jupiter
(27° from sun on evening sky)
Aug 27, 12h, Venus 0.07° NNE of Jupiter
(22° from sun in evening sky)

Planets in August

 Mercury makes a rather poor (for northern observers) appearance in August, reaching maximum elongation on Aug 16.	 Venus is low in the eastern sky after sunset. Very close to Jupiter on August 27.	 Mars close to the meridian at sunset. Can be viewed in the southwest in the evening at magnitude -0.4.
 Jupiter shines brightly low in the western sky during the evening hours.	 Saturn Shines brightly close to Mars in the mid-evening hours.	 Uranus can be seen in the east before dawn.. Will be easier to observe later in the year.
 Neptune above Uranus in the predawn sky. Will be better placed for viewing in the fall.	 2-Pallas (Asteroid) reaches opposition on August 19 at magnitude +9.2	 Pluto (Dwarf Planet) reached opposition last month so this is a good month to try to observe this very dim dwarf planet. Best viewed in late evening.

HAWAIIAN ASTRONOMICAL SOCIETY GENERAL MEMBERSHIP MEETING July 5, 2016

President Chris Peterson called the July 5, 2016 meeting of the Hawaiian Astronomical Society to order at 7:34 p.m. The meeting was held in Planetarium, on the grounds of the Bishop Museum, Honolulu, Hawaii. There were twenty-four members and three visitors in attendance.

Observing: President Chris Peterson announced that there will be viewing of the night sky on the observing deck after this evening's meeting, should the weather permit.

Chris urged all interested members to join us at either the dark sky viewing site at Dillingham Airfield on the North Shore of O'ahu, or at our suburban star parties at Geiger Park or Kahala Community Park. You don't need to be a university professor to come out and have a great time helping us to share the night sky with the public.

Hawaii Space Lecture Series – This month the Hawaii Space Lecture Series will not present a free lecture. Regular lectures usually take place at the NASA Pacific Regional Planetary Data Center, room 544 in the Pacific Ocean Science and Technology Building on the Manoa campus of the University of Hawaii. Should you be interested in upcoming lectures or for information you can contact NASA PRPDC at 808-956-3132 or on the Web go to <http://www.higp.hawaii.edu/prpdc>.

Visitors - We had three visitors to this H.A.S. monthly meeting. The father and son, Randy and Dane Sobol were in attendance as was a third individual.

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(Continued from page 2) President's Report

The ash is also an efficient collector of the solar wind. A little heat releases these loosely bound gasses. The hydrogen could be used to react with oxygen-bearing rocks to produce water vapor for use in life support and in fuel cells.

Another solar wind gas that could be collected is helium 3, an isotope that will someday be needed in relatively clean (compared to starting with hydrogen) fusion reactors. It is probably the only physical component of the Moon that could be profitably brought back to Earth.

Instead of cursing the next full Moon, try observing the fascinating Aristarchus Plateau.

Chris Peterson

Hawaiian Astronomical Society

Event Calendar

August 2016						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
31	1	2	3	4	5	6
	8:00 PM Globe at Night	8:00 PM Globe at Night 7:30 PM Club Meeting	8:00 PM Globe at Night	8:00 PM Globe at Night	8:00 PM Globe at Night	8:00 PM Globe at Night
7	8	9	10	11	12	13
sunset 19:06						6:45 PM Public Star Party(G) 6:45 PM Public Star Party(K)
14	15	16	17	18	19	20
sunset 19:02						6:45 PM Public Star Party(D)
21	22	23	24	25	26	27
sunset 18:56				8:00 PM Globe at Night	8:00 PM Globe at Night 5:00 PM Ann Casson	8:00 PM Globe at Night 6:35 PM Club Star Party(D) (Private)
28	29	30	31	1	2	3
8:00 PM Globe at Night sunset 18:50	8:00 PM Globe at Night	8:00 PM Globe at Night	8:00 PM Globe at Night			

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Upcoming Star Parties
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Public Party-Dillingham August 20
Public Party Geiger August 13
Public Party Kahala August 13

Upcoming School Star Parties		
		No School Parties Scheduled

(Continued from page 4) Meeting Minutes

In the News- President Chris Peterson directed a discussion regarding the Juno Mission. The mission launched in August of 2011. It obtained a safe, polar orbit in July of 2016, after it completed a 35-minute engine burn.

Upcoming Events: Club secretary, Gretchen West, asks for club members to join her to share information with the public on October 29, 2016 at Punahou School's annual Lacy Veach Day of Discovery. A sign-up has been passed around at the meeting. Anyone interested in helping out at the event should contact Gretchen.

Pot Luck Supper - We will be having a Pot Luck Supper prior to the December 2016 General Membership meeting. Pencil it in on your calendars and consider what you will bring to help us celebrate the holiday season. The supper will be held in the Activity room adjacent to the Planetarium. Further detail will be outlined in next month's Astronews.

Advertisements for Astronomy related materials are allowed in issues of the Astronews for club members.

Star Party Report – Summer vacation time means no school star parties, but it does mean that we have organizations that frequent the Dillingham Airfield star parties and the suburban star parties at Kahala and Geiger Park. We will have 30-40 individuals who will be joining us at the Dillingham Airfield at the end of July. These twelve to eighteen year olds, their troop leaders, and parents will join us to help the boy scouts prepare to earn merit badges in astronomy.

Our recent Dillingham Airfield star parties have had relatively good seeing with somewhat poor transparency. We have had the opportunity to view a larger and brighter than usual Mars. Also in the night skies during the months of June and July has been Saturn, with its distinctive Cassini division, and Jupiter.

Astronomy League of the Pacific Elections – All members should have received notification of the election of club officers. There are 3 officers up for election, seemingly uncontested. If you are interested in placing your name in nomination, be quick.

Yahoo group? – An unauthorized Yahoo group has been posting dates and times for meetings and star parties with incorrect information. We will be looking to having the parties making such postings to desist.

Discussions - President Chris Peterson reported upon the following:

The Dawn Mission,
The Mar exploration rover, Opportunity,
The Cassini space craft, and
A short discussion of the size of materials that comprise Saturn's rings.

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As Earth speeds along in its annual journey around the Sun, it consistently overtakes the slower-orbiting outer planets, while the inner worlds catch up to and pass Earth periodically. Sometime after an outer world—particularly a slow-moving gas giant—gets passed by Earth, it appears to migrate closer and closer to the Sun, eventually appearing to slip behind it from our perspective. If you've been watching Jupiter this year, it's been doing exactly that, moving consistently from east to west and closer to the Sun ever since May 9th.

On the other hand, the inner worlds pass by Earth. They speed away from us, then slip behind the Sun from west to east, re-emerging in Earth's evening skies to the east of the Sun. Of all the planets visible from Earth, the two brightest are Venus and Jupiter, which experience a conjunction from our perspective only about once per year. Normally, Venus and Jupiter will appear separated by approximately 0.5° to 3° at closest approach. This is due to the fact that the Solar System's planets don't all orbit in the same perfect, two-dimensional plane.

But this summer, as Venus emerges from behind the Sun and begins catching up to Earth, Jupiter falls back toward the Sun, from Earth's perspective, at the same time. On August 27th, all three planets—Earth, Venus and Jupiter—will make nearly a perfectly straight line.

As a result, Venus and Jupiter, at 9:48 PM Universal time, will appear separated by only 4 arc-minutes, the closest conjunction of naked eye planets since the Venus/Saturn conjunction in 2006. Seen right next to one another, it's startling how much brighter Venus appears than Jupiter; at magnitude -3.80, Venus appears some *eight times brighter than* Jupiter, which is at magnitude -1.53.

Look to the western skies immediately after sunset on August 27th, and the two brightest planets of all—brighter than all the stars—will make a dazzling duo in the twilight sky. As soon as the sun is below the horizon, the pair will be about two fists (at arm's length) to the left of the sun's disappearance and about one fist above a flat horizon. You may need binoculars to find them initially and to separate them. Through a telescope, a large, gibbous Venus

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August hosts three meteor showers, two are quite minor, and the third is one of the two biggest showers of the year. The Perseids reach their peak on August 12th (the other major shower is the Geminids in December). A pair of researchers (Maslov and Lyytinen) predict that the Earth will cross a part of the debris stream left by parent comet, 109P/Swift-Tuttle which was shifted closer to the Earth's orbit by Jupiter in 2016. As a consequence, the background zenith hourly rate (ZHR), which is the maximum number of meteors that a single observer can see under perfect conditions, may reach a level of 150–160. This is a very large count, and is usually adjusted downwards by two factors. First, the ZHR is affected by many conditions (sky transparency, cloud cover, humidity, horizon elevation, and human distractions). Secondly, predicting perturbations on a stream of small particles in orbit around the sun is hugely difficult.

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First Quarter	Full Moon	Last Quarter	New Moon
August 10	August 18	August 25	August 2

Shower	Activity	Maximum		Radiant		V _∞	r	ZHR
		Date	λ ⊙	α	δ	km/s		
Perseids (007 PER)	07/17→ 08/24	Aug 12	140°	48°	+58°	59	2.2	150
κ-Cygnids (012 KCG)	08/03→ 08/25	Aug 17	145°	286°	+59°	25	3.0	3
α-Aurigids (206 AUR)	08/08→ 09/05	Aug 31	158.6°	91°	+39°	66	2.5	6

Keep looking up, it may pay off! For more info contact: Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Treasurer's Report

by April Lew

HAS Financial Report June 16 – July 15 2016			
Beginning Balance	1,668.17		
Income:			
	Dues Received	158.00	
	Donation	11.00	
	Sky & Telescope subscriptions	65.90	
	Astronomy Magazine subscriptions	68.00	
	Telescope rental	60.00	
Total Income	362.90		
Expenses:			
	May Astronews printing & mailing	42.74	
	Sky & Telescope subscriptions	65.90	
	Astronomy Magazine subscriptions	68.00	
Total Expenses	176.64		
Ending Balance	1,854.43		

We welcome seven new members this month. They are **Jarin, Gordon, Jari, Jaci, Thomas, & Frances Ashimine and Riley Hermosura.**

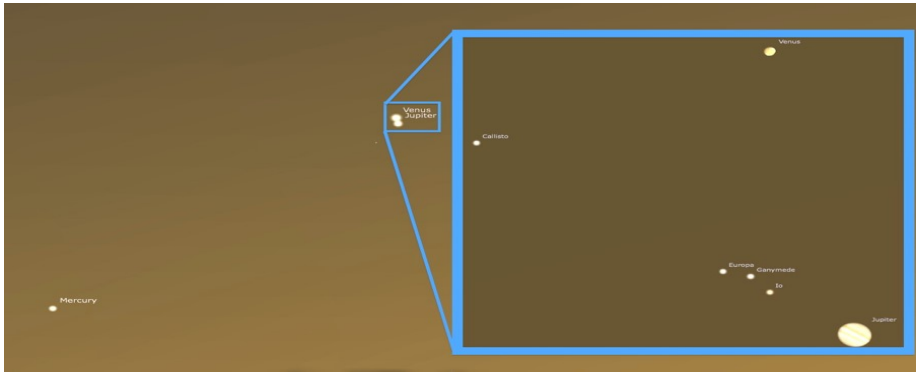
Many thanks to those renewing their membership (Mary Becker, John Gallagher, Andy & Hiroko Stroble, Stephany & Daniel Taba, Gretchen West, and Elissa Yellin)

As a reminder, please check your membership anniversary date listed on the Astronews address label. Clear skies to all!

(Continued from page 7) Space Place

will appear no more distant from Jupiter than Callisto, its farthest Galilean satellite.

As a bonus, Mercury is nearby as well. At just 5° below and left of the Venus/Jupiter pair, Mercury achieved a distant conjunction with Venus less than 24 hours prior. In 2065, Venus will actually occult Jupiter, passing in front of the planet's disk. Until then, the only comparably close conjunctions between these two worlds occur in 2039 and 2056, meaning this one is worth some special effort—including traveling to get clear skies and a good horizon—to see!



I. Image credit: E. Siegel, created with Stellarium, western skies as they will appear this August 27th just after sunset. Inset shows Venus and Jupiter as they'll appear through a very good amateur telescope.



Meteor imaged from the International Space Station. Nice to know that as we observe from the surface looking up, the astronauts on the ISS may be looking from the other side! More on this experiment in a future issue

**H.A.S.
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The image was taken on July 10, 2016 at 5:30 UTC, when the spacecraft was 2.7 million miles (4.3 million kilometers) from Jupiter on the outbound leg of its initial 53.5-day capture orbit. The image shows atmospheric features on Jupiter, including the Great Red Spot, and three of Jupiter's four largest moons. More information about Juno is online at <http://www.nasa.gov/>