The Perseid showers that climaxed in the middle of August were spectacular. Tom Giguere and Ort Vanaprucks have story and photos in the Meteor Log.

In sports there seems to be a division between those who like it slow mostly with a few quick decisive moments that determine and those who are in for the wild ride. The first is baseball and the second is basketball. Maybe there is something similar in astronomy where those who have a need for speed prefer meteors and comets (space stations and satellites?). Anyway, we have two comets approaching Earth that promise a thrill for all but perhaps something more for the Meteor people. One is comet 21P/Giacobini-Zinner, parent object of the Draconid Meteor Shower. It will have its closest approach in 72 years. The other comet, Wirtanen, will be even closer and may be visible to the unaided eye later this year. 21P will have its closest approach to the Sun and Earth on the same day, September 10, 2018. It will be 36 million mile distant, so no need for collision insurance. You will be able to see 21P with binoculars during the first half of September.

The other comet is comet Wirtanen or 46P/Wirtanen which may be visible to the unaided eye in December 2018. The closest approach to the sun will be December 12, 2018, and closest approach to Earth is just a few days later, on December 16. For more detail see: http://earthsky.org/space/2-comets-21p-giacobini-zinner-wirtanen-2018
President’s Message
September 2018

Have you had a chance to view Mars during this opposition cycle? I’m glad I went to Dillingham for the pubic star party in August. Unfortunately, the evening started out mostly overcast, and many in the large crowd left at the first gate opening, about 8:30. Most people only got a brief glimpse at a planet or two through unsteady seeing, if that.

Of course, as these things seem to go so often, shortly thereafter the sky began to clear. Around 9:15 or 9:30, if I recall correctly, we were treated to a spectacular Earth-grazing Perseid meteor. When the radiant of a meteor shower is just rising (as Perseus was about then), the motion of the meteors relative to Earth is nearly parallel to the flat ground under the feet of observers. That allows a meteoroid to dip shallowly into the Earth’s atmosphere as it passes overhead. This can result in a long-lasting meteor such as the one we saw. Even though my head was down, when I heard the first oohs an aahs I had enough time to lift my head, look around to spot the meteor, and see the last third or so of the multi-tailed green trail as it headed toward the mountains.

Jupiter, Saturn, and Mars all put in a good appearance. The global dust storm, or PEDE (Planet Encircling Dust Event), on Mars continues to abate, but details were still muted, although the south polar cap was clearly visible, and I think I could make out the north polar hood.

The next week at Kahala was a near-washout. Sue set up her tabletop scope and showed the Moon briefly, but that was about it. Now it’s a race between the clearing of the dust storm and the shrinking apparent size of Mars.

(Continued on page 4)
Observer’s Notebook—September 2018 by Jay Wrathall

Planets Close To the Moon
Times are Hawaii Standard Time

Sep 12, 06h, Venus 10° S of Moon
Sep 13, 16h, Jupiter 4.6° S of Moon
Sep 17, 06h, Saturn 2.3° S of Moon
Sep 19, 18h, Mars 4.7° S of Moon
Sep 23, 07h, Neptune 2.3° N of Moon
Sep 27, 00h, Uranus 4.5° N of Moon

Mercury is closer that 15° from the sun when near the moon in September.

Planets in September

<table>
<thead>
<tr>
<th>Planet</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>can be seen low in the dawn sky during the first week of September</td>
</tr>
<tr>
<td>Venus</td>
<td>shines brightly very low in the western sky after sunset at a magnitude of -4.6 to -4.8. Binoculars may be helpful because even though very bright, it is low in the evening dusk.</td>
</tr>
<tr>
<td>Mars</td>
<td>At the beginning of the month Mars is still the second brightest planet at mag. -2.1 but fades rapidly to mag. -1.3 by month’s end. It is in Sagittarius.</td>
</tr>
<tr>
<td>Jupiter</td>
<td>is low in the southwest after sunset and shines brightly at magnitude -1</td>
</tr>
<tr>
<td>Saturn</td>
<td>Reaches opposition in October, so it nearly overhead at midnight and can be observed late in the evening.</td>
</tr>
<tr>
<td>Neptune</td>
<td>reaches opposition on September 7, so is in the sky all night and is the brightest of the year at mag. +7.8.</td>
</tr>
<tr>
<td>Vesta (Asteroid)</td>
<td>reaches opposition on September 7, so is in the sky all night and is the brightest of the year at mag. +7.8.</td>
</tr>
<tr>
<td>Pluto (Dwarf Planet)</td>
<td>reaches opposition on September 7, so is in the sky all night and is the brightest of the year at mag. +7.8.</td>
</tr>
</tbody>
</table>

Other Events of Interest
Times are Hawaii Standard Time

Sep 7, 08h, Neptune at opposition
Sep 9, 08:01h, Moon New
Sep 20, 16h, Mercury at superior conjunction
(Passes into evening sky)
Sep 22, 16:54h, Autumnal equinox.
Sep 24, 16:52h, Moon Full
President Chris Peterson called the August 7, 2018 meeting of the Hawaiian Astronomical Society to order at 7:30 p.m. The meeting was held in the Planetarium on the grounds of the Bishop Museum, Honolulu, Hawaii. There were approximately twenty-five members in attendance.

Old business:
July meeting minutes were adopted.

Dillingham security reported thefts from hangers. All visitors to stay only at observing site or the bathrooms and not wander around.

We have permission to stay later at Dillingham at the August 11 star party to view the Perseid meteor shower. There is security on-site 7 x 24, so we can call security to open the gate for exit at anytime.

Mark reminded us of upcoming Star parties: Aug 17 for the military home school group. August 11 at Dillingham 35 Girl Scouts will be attending the Public Star Party.

Aug 4 Bishop Planetarium show, which was sold out, Ort & Chris helped out, Mark manned the telescope in the observatory. Telescope is working. It was partly cloudy and drizzly, but observers did see Mars, Jupiter and 4 of its moons.

(Continued from page 2) President’s Message

Two years from now we’ll get an opposition nearly as good as this one, but it will be past the perihelion of Mars rather than before like this one. Mars will gradually increase in size but more rapidly decrease after opposition as it moves away from the Sun.

By next Mars opposition, we may understand dust storm dynamics better. This one was unusual because it started earlier than usual in the Martian year, well before perihelion. Fortunately, we have a large fleet of spacecraft in place at Mars that should help us learn more about this still somewhat mysterious phenomenon

Chris Peterson
## Hawaiian Astronomical Society
### Event Calendar

### Upcoming Star Parties

**Public Party** - Dillingham September 1 (Peter Besenbruch)

**Public Party Geiger** - September 15

**Public Party Kahala** - September 15

### Upcoming School Star Parties

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fri</td>
<td>September 14</td>
<td>Wahiawa Middle School</td>
</tr>
<tr>
<td>Sat</td>
<td>September 21</td>
<td>Hawaii Baptist Academy Middle School</td>
</tr>
</tbody>
</table>

**Notes:**
- 3:30 PM Board Meeting
- 6:22 PM Sunset
- September 2
  - 7:30 PM Club Meeting
- September 6
  - 6:15 PM Public Star Party Dillingham(D)
They discovered water on Mars again! A subterranean lake near the polar cap was identified. Mars is not a good candidate for terra-forming, not enough frozen Co2 & water to make gas for atmosphere.

Visitors: Carl & Gabriella - grandkids of the Sandbo’s; Alena - a visitor of Geiger Park star party, Captain M. and Mrs, and Roger Kobayashi.

Tom Giguere talked about the upcoming Perseid meteor shower Sat & Sun, Aug 11 & 12. We can stay all night at Dillingham. Bring a chair, insect repellant, and snacks. The suggested list for things to bring is in the Meteor Log in the Astronews.

Videos shown: NASA’s TESS, Transiting Exoplanet Survey Satellite, featuring a comet.

Speaker: Graham Kelaher, showed his astro photos of the southern sky, most from Lake Ballard and Nullabor, in southern Australia.
Comet Lovejoy in 2014
The Magellanic Clouds
ISS moon transit in 2017
Amazing photos of the Southern Aurora Borealis

Member Dave Ziemann showed us his astro photos of the Crab Nebula, Andromeda Galaxy, M33 a pinwheel galaxy, the Orion Nebula, the Pleiades constellation, M51 whirlpool galaxy, and others.

Poly Maio was elected by the present HAS members as Vice President.

Joanne – Took us flying to double star Alberio A & B.

Perseid Meteor shower radiant rising at 10pm.

As there was no other business, the meeting was adjourned at 9 pm.

_Sincerely,
Secretary April Lew_
Feeling like you missed out on planning a last vacation of summer? Don’t worry—you can still take a late summertime road trip along the Milky Way!

The waning days of summer are upon us, and that means the Sun is setting earlier now. These earlier sunsets reveal a starry sky bisected by the Milky Way. Want to see this view of our home galaxy? Head out to your favorite dark sky getaway or to the darkest city park or urban open space you can find.

While you’re out there waiting for a peek at the Milky Way, you’ll also have a great view of the planets in our solar system. Keep an eye out right after sunset and you can catch a look at Venus. If you have binoculars or a telescope, you’ll see Venus’s phase change dramatically during September—from nearly half phase to a larger, thinner crescent.

Jupiter, Saturn and reddish Mars are next in the sky, as they continue their brilliant appearances this month. To see them, look southwest after sunset. If you’re in a dark sky and you look above and below Saturn, you can’t miss the summer Milky Way spanning the sky from southwest to northeast.

You can also use the summer constellations to help you trace a path across the Milky Way. For example, there’s Sagittarius, where stars and some brighter clumps appear as steam from a teapot. Then there is Aquila, where the Eagle’s bright Star Altair combined with Cygnus’s Deneb and Lyra’s Vega mark what’s called the “summer triangle.” The familiar W-shaped constellation Cassiopeia completes the constellation trail through the summer Milky Way. Binoculars will reveal double stars, clusters and nebulae all along the Milky Way.

Between Sept. 12 and 20, watch the Moon pass from near Venus, above Jupiter, to the left of Saturn and finally above Mars! telescope. To see them, look in the southeastern sky at 1 a.m. or later. If you stay awake, you can also find Mercury just above Earth’s eastern horizon shortly before sunrise. Use the Moon as a guide on Sept. 7 and 8.

Although there are no major meteor showers in September, cometary dust

(Continued on page 10)
The 2018 Perseid meteor shower was well attended this year due to the shower peak falling very near the HAS public star party night on the night of August 11/12. The new Moon occurred on August 11 so did not interfere at all. With the various groups attending (girl and boy scouts) plus the regular sky watchers, we had at least 80 in attendance! We had permission for HAS club members to stay overnight at the Dillingham site, with the assurance that the outside gate would be locked until 5am for security.

Alas, new attendees tire quickly when the sun goes down, most of the folks left with the first gate opening. The clouds were worrisome at first but dissipated as the evening progressed; passing clouds interrupted viewing several times but overall were not an issue. People who stayed longer (~9:45pm) were treated to a beautiful horizon-to-horizon fireball that crossed from the northeast to the southwest and had a relatively slow velocity which allowed everyone within earshot to hear the exclamations “fireball” and turn and see the rest of the spectacle. At the last gate opening cars headed for the exit, (Continued on page 10)

<table>
<thead>
<tr>
<th>First Quarter</th>
<th>Full Moon</th>
<th>Last Quarter</th>
<th>New Moon</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 16</td>
<td>September 24</td>
<td>September 02</td>
<td>September 09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shower</th>
<th>Activity</th>
<th>Maximum</th>
<th>Radiant</th>
<th>( V_\infty )</th>
<th>( r )</th>
<th>ZHR</th>
</tr>
</thead>
<tbody>
<tr>
<td>α-Aurigids</td>
<td>(206 AUR)</td>
<td>Sep 01</td>
<td>158.6°</td>
<td>91°</td>
<td>+39°</td>
<td>66</td>
</tr>
<tr>
<td>Sept. ε-Perseids</td>
<td>(208 SPE)</td>
<td>Sep 09</td>
<td>166.7°</td>
<td>48°</td>
<td>+40°</td>
<td>64</td>
</tr>
<tr>
<td>Dayt. Sextantids</td>
<td>(221 DSX)</td>
<td>Sep 27</td>
<td>184.3°</td>
<td>152°</td>
<td>+00°</td>
<td>32</td>
</tr>
</tbody>
</table>

The Perseids put on a great show with little interference from the Moon last month! 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

Cash Flow - 07/10/2018 to 08/09/2018

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td><strong>Beginning Ballance</strong></td>
<td>$2004.35</td>
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<tr>
<td>Money into selected accounts comes from</td>
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<tr>
<td><strong>Membership - Paper</strong></td>
<td>$25.00</td>
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<tr>
<td>Money In</td>
<td>$25.00</td>
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<tr>
<td>Money out of selected accounts goes to</td>
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<tr>
<td><strong>Office-supplies</strong></td>
<td>$83.76</td>
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<tr>
<td>Money Out</td>
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<tr>
<td>Difference</td>
<td>-$58.76</td>
</tr>
<tr>
<td><strong>Ending Balance</strong></td>
<td>1945.59</td>
</tr>
</tbody>
</table>

Summer slow time continues, exacerbated by your treasurer’s lousy chest cold. That will change with the next report, as there will be some new memberships and a large insurance bill. For now, I am simply grateful that hurricane Lane fizzled when it did.

I will be taking orders for Astronomy Magazine calendars at the next meeting.
appears in another late summer sight, the morning zodiacal light. Zodiacal light looks like a cone of soft light in the night sky. It is produced when sunlight is scattered by dust in our solar system. Try looking for it in the east right before sunrise on the moonless mornings of Sept. 8 through Sept 23.

You can catch up on all of NASA’s current—and future—missions at www.nasa.gov

Caption: This illustration shows how the summer constellations trace a path across the Milky Way. To get the best views, head out to the darkest sky you can find.
Credit: NASA/JPL-Caltech

(Continued from page 8) Meteor Log Tom Giguere

leery of being trapped for the night. The hard-core observers settled in for the rest of the show. The night was warm enough, cooling only slightly in the wee hours. By this time there were 8-10 of us watching. Our group total count for the night was 211; which included 155 Perseids, and 56 sporadic (random) meteors. Please see photos, courtesy of Ort Vanapruks, on the next page(11).
Perseid looking South, with Mars. Photo: Ort Vanapruks

Perseid, with Galaxy M31. Photo: Ort Vanapruks
A 100 foot-wide (30 meter), 28 million-pound (12.8 million-kilogram) boulder, was found to have moved 460 feet (140 meters) on comet 67P/Churyumov-Gerasimenko.