Photos Masking
Photos masking is a process that you could combine multiple photos into one photo by hiding part of the other photos. There is many software such as GIMP (Free) and Adobe Photoshop that can be used for this purpose. The one that I used is Adobe Photoshop for it is the most common software for photographer.

The step to do this is by adding photos into Adobe Photoshop (Ps) as layers. The main photo is added as a background layer. The second photo (the one that will have part of the masked) will be the top layer. Next step is added mask to the second layer. A brush tool is used to remove part of the second photo to show the background photo. Once you are happy, you can combine the two layers as one layer of the final image.
President’s Message
September 2019

Are we alone in the universe? Is there other life out there somewhere? These questions are as old as our understanding that there are other places besides Earth where life could exist. We now know that there are countless other planets even just in our own galaxy, but we’re no closer to knowing how abundant life may be beyond Earth.

There are several places in our own solar system that might harbor extraterrestrial life. In the next several decades, we should have a pretty good idea if there is other life around the Sun. Of course, finding other life would answer the question definitively (although we must beware of false positives, such as the evidence in the Martian meteorite a few decades back). Ruling out life because we haven’t found it is more problematic, but we have some good places to start looking.

NASA has just approved the Europa Clipper mission’s continued development. This mission would orbit the moon of Jupiter that is believed to have a thick ocean of water beneath an icy crust a few kilometers deep. The gravitational forces exerted by Ganymede and Callisto on Europa’s orbit make it a bit elliptical. That results in periodic squeezing by massive Jupiter that pumps heat into Europa’s interior. That heat has kept the ocean liquid, probably for most of its history, and may be released into the ocean through phenomena similar to the black smokers on the floor of Earth’s ocean.

It is unlikely that Europa Clipper will discover life at Europa, but it may find tantalizing hints. More missions will need to follow on, and eventually we will get a sample of the ocean water that may harbor Europa’s life. Other icy moons, such as Saturn’s Enceladus, also contain liquid water where life might exist. Mars also has pockets of water underground where any life that arose in a warmer, wetter past may have retreated.

It is very likely that within the lifetimes of the younger members of our club, the question “Is there other life in our solar system?”

(Continued on page 4)
### Planets Close To the Moon

**Times are Hawaii Standard Time**

- Sep 5, 22h, Moon 2.3º NNE of Jupiter (92º from sun in evening sky)
- Sep 8, 04h, Moon 0.15º ESE of Saturn (118º from sun in evening sky)
- Sep 13, 11h, Moon 3.5º SE of Neptune (174º from sun in midnight sky)
- Sep 17, 01h, Moon 4.2º SE of Uranus (138º from sun in morning sky)
- Sep 29, 17h, Moon 3.8º NNE of Mercury (19º from the sun in evening sky)

Venus and Mars are closer than 15º from the sun when near the moon in September.

### Other Events of Interest

**Times are Hawaii Standard Time**

- Sep 3, 01h, Mars at conjunction with sun (Passes into morning sky)
- Sep 3, 15h, Mercury at superior conj. with sun (Passes into evening sky)
- Sep 9, 21h Neptune at opposition
- Sep 13, 18:34h, Full Moon
- Sep 22, 21.51h, Fall or autumnal equinox (First day of fall)
- Sep 28, 08:27h, New Moon (19º from the sun in evening sky)

### Planets in September

<table>
<thead>
<tr>
<th>Planet</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>is visible low in the west in the evening twilight at the end of the month, but this is a very poor appearance for northern observers.</td>
</tr>
<tr>
<td>Venus</td>
<td>is very close to the sun in September, but may be viewed late in the month in the evening twilight because it’s so bright.</td>
</tr>
<tr>
<td>Mars</td>
<td>Reaches conjunction with the Sun on September 3 and cannot be viewed this month.</td>
</tr>
<tr>
<td>Jupiter</td>
<td>Shines brightly in the southwest after sunset at a magnitude of -2.1.</td>
</tr>
<tr>
<td>Saturn</td>
<td>is visible from sunset until about midnight in the southwest sky at magnitude +0.4.</td>
</tr>
<tr>
<td>Uranus</td>
<td>rises about 10:00 PM and is best viewed in the early morning hours.</td>
</tr>
<tr>
<td>Neptune</td>
<td>reaches opposition this month and so is visible all night. It is best viewed near midnight.</td>
</tr>
<tr>
<td>4 Vesta (Asteroid)</td>
<td>Is the brightest asteroid in the sky in September at magnitude +7.5. It will brighten until November when it reaches opposition.</td>
</tr>
<tr>
<td>Pluto (Dwarf Planet)</td>
<td>reached opposition in July and so is still well placed for viewing</td>
</tr>
</tbody>
</table>
President Chris Peterson called the August 6, 2019 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, Hawai‘i.

July membership meeting minutes were adopted

Mark Watanabe reported on upcoming school star parties and passed around a signup sheet:

Pearl Harbor Elementary
Helemanu Elementary
September 6 - Hawai‘i Baptist Academy
October 5 - Girl Scouts
TBD - Pearl City Highlands Elementary

Chris Peterson introduced Roy Gal from Institute For Astronomy (IFA). He is the outreach director for IFA and reported on issues regarding the Thirty-Meter Telescope (TMT). There is an on-going protest regarding the building of the TMT on Mauna Kea and there is currently a stalemate regarding TMT construction and it’s unknown when the stalemate will end. Although the protestors say there is no compromise on blocking construction of TMT, TMT officials state Mauna Kea is their primary location and that the Canary Islands remain the secondary location. IFA is asking for support from the Hawai‘i Astronomical Society for building of the TMT on Mauna Kea. Roy will provide Chris an email address to use to provide support for the TMT project. Roy then took questions and answers regarding the TMT.

Two students from Campbell High School attended the meeting and provided feedback regarding social media and perceptions regarding building of the TMT from a student’s perspective.

Roy distributed TMT support t-shirts to club members who wanted one.

Chris Peterson showed videos celebrating the 50th anniversary of the first moon landing with actual footage from Buzz Aldrin’s window and simulated footage from Neil Armstrong’s window.

Astronomical photos and video taken by club members were shown to the group.

Chris Peterson called for a volunteer for Club Secretary since April Lew is no longer available. Tammy Weese volunteered.

The moon will interfere with the Perseids Meteor Shower this year and therefore the Club has not scheduled a star party.

There was a star party held at Camp Palehua above Makakilo and Chris Peterson has information

(Continued from page 2) President’s Message

will be answered with a “Yes.” or “No.” Either answer would carry profound significance. If there is other life in our own solar system, it is probably common in the universe. If not, there must be something very special about Earth that has allowed life to arise here. All the places that we now think could hold life but don’t will help to narrow down what the special characteristics of Earth are.
### Hawaiian Astronomical Society

**Event Calendar**

<<Upcoming Star Parties>>

**Public Party Geiger/Kahala September 7**

**Public Party Dillingham September 21**

**Club Party-Dillingham September 28**

**Upcoming School Star Parties**

<table>
<thead>
<tr>
<th>Time</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 PM</td>
<td>Fri, Sept. 6</td>
<td>Hawaii Baptist Academy</td>
</tr>
</tbody>
</table>
on who runs the camp so the club can investigate getting access to the location for future Club activities.

China, Russia and Europe have started discussing a lunar research station they want to build. U.S. policy is so restrictive that NASA isn’t allowed to currently work with the Chinese.

Thomas Chee recorded a meteor on the American Meteor Society website at amsmeteors.org.

Chris Peterson reminded everyone about the star parties held every month both at Kahala and Geiger and up at Dillingham Airfield.

The meeting was adjourned at 9 pm. Refreshments were served in the rotunda and furnished by Hiroko and Andy Stroble.

Sincerely,
Secretary Tammy Weese

(Continued from page 1)
September skies are a showcase for the **Summer Triangle**, its three stars gleaming directly overhead after sunset. The **equinox** ushers in the official change of seasons on September 23. **Jupiter** and **Saturn** maintain their vigil over the southern horizon, but set earlier each evening, while the terrestrial planets remain hidden.

The bright three points of the **Summer Triangle** are among the first stars you can see after sunset: Deneb, Vega, and Altair. The Summer Triangle is called an **asterism**, as it’s not an official constellation, but still a striking group of stars. However, the Triangle is the key to spotting multiple constellations! Its three stars are themselves the brightest in their respective constellations: Deneb, in Cygnus the Swan; Vega, in Lyra the Harp; and Altair, in Aquila the Eagle. That alone would be impressive, but the Summer Triangle also contains two small constellations inside its lines, Vulpecula the Fox and Sagitta the Arrow. There is even another small constellation just outside its borders: diminutive Delphinus the Dolphin. The Summer Triangle is huge!

The **equinox** occurs on September 23, officially ushering in autumn for folks in the Northern Hemisphere and bringing with it longer nights and shorter days, a change many stargazers appreciate. Right before sunrise on the 23rd, look for Deneb - the Summer Triangle’s last visible point - flickering right above the western horizon, almost as if saying goodbye to summer.

The Summer Triangle region is home to many important astronomical discoveries. Cygnus X-1, the first confirmed black hole, was initially detected here by x-ray equipment on board a sounding rocket launched in 1964. NASA’s Kepler Mission, which revolutionized our understanding of exoplanets, discovered thousands of planet candidates within its initial field of view in Cygnus. The Dumbbell Nebula (M27), the first planetary nebula discovered, was spotted by Charles Messier in the diminutive constellation Vulpecula way back in 1764!

Planet watchers can easily find **Jupiter** and **Saturn** shining in the south after sunset, with Jupiter to the right and brighter than Saturn. At the beginning of September, Jupiter sets shortly after midnight, with Saturn following a couple of hours later, around 2:00am. By month’s end the gas giant duo are setting noticeably earlier: Jupiter sets right before 10:30pm, with Saturn following just after midnight. Thankfully for planet watchers, earlier fall sunsets help these giant worlds remain in view for a bit longer. The terrestrial planets, Mars, Venus, and Mercury, remain hidden in the Sun’s glare for

*(Continued on page 10)*
The Perseids (007 PER) were a near bust last month. The near full Moon was just too bright to allow serious observing.

This month we feature two minor showers described in the IMO meteor news, bookends for September, at the beginning and end of this month. The Aurigids (206 AUR), a northern-hemisphere shower, has produced short, unexpected, outbursts at times, with peak ZHRs of $\approx 30–40$ recorded in 1935, 1986 and 1994. Other events may have been missed because the shower has not been monitored regularly until very recently. Only three observers covered the 1986 and 1994 outbursts. The first predicted outburst happened roughly as expected in 2007, characterized by many bright meteors. The peak ZHR of $\approx 130$ lasted only for about 20 minutes. Radio data suggested there was a ‘tail’ to that event where more faint meteors continued for maybe an hour after the strongest peak, but visual observers could not confirm this, probably due to the moonlit sky. The Aurigid radiant reaches a useful elevation only after $\approx 01$h local time. For 2019, there are no predictions for enhanced rates from this source, but new Moon on September 1 guarantees perfect conditions to check.

The Sextantids (221 DSX), may be observed in the pre-dawn of late September to early October. The DSX radiant is roughly 30° west of the Sun. Because it lies close to the equator and the activity period is shortly after the equinox, the opportunity to contribute results is the same for observers in either hemisphere. Since, the radiant elevation correction and the observing conditions change rapidly as morning twilight approaches, visual observers should report their data in intervals no longer than about 15–20 minutes, determining the limiting magnitude frequent-

(Continued on page 11)

<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 (206 AUR)</td>
<td>Aug 28-Sep 05</td>
<td>Sep 01</td>
<td>158.6°</td>
<td>91°</td>
<td>+39°</td>
<td>66</td>
</tr>
<tr>
<td>Sept. ε-Perseids (208 SPE)</td>
<td>Sep 05-Sep 21</td>
<td>Sep 09</td>
<td>166.7°</td>
<td>48°</td>
<td>+40°</td>
<td>64</td>
</tr>
<tr>
<td>Dayt. Sextantids (221 DSX)</td>
<td>Sep 09-Oct 09</td>
<td>Sep 28</td>
<td>184.3°</td>
<td>152°</td>
<td>+00°</td>
<td>32</td>
</tr>
</tbody>
</table>

I saw one Perseid last month, anyone beat my record!?! For more info contact: Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.
Thanks to all who have renewed their membership, Thanks also for the generous donation. The next financial report will likely show the liability insurance bill, plus some magazine subscriptions.

Here’s the usual monthly nag: If you receive the Astronews by e-mail, you get several reminders to renew. If you receive a paper copy, your reminder is that cryptic number at the bottom of your mailing label, such as 20-02. In this case it means your membership expires February 1 in 2020.

The other nag has to do with volunteering. A major part of our efforts have to do with volunteering to show the sky to the public. We tend to pass around signup sheets at the meetings on the first Tuesday of the month. August was the first time our star party coordinator sent notices asking for help with a star party in Wahiawa. Thanks to all who helped, and please make time to show people the sky.
(Continued from page 7) NASA’s Night Sky Notes

the entire month.

Discover the latest in space science from the NASA missions studying our universe at nasa.gov

Caption: Once you spot the Summer Triangle, you can explore the cosmic treasures found in this busy region of the Milky Way. Make sure to “Take a Trip Around the Triangle” before it sets this fall! Find the full handout at bit.ly/TriangleTrip

Caption: This wider view of the area around the Summer Triangle includes another nearby asterism: the Great Square of Pegasus.
ly during each period. The timing, and even the date, of the Sextantid maximum is uncertain. Recent radio data have indicated that the maximum may occur a day earlier than expected.

![Fireball and Aurora over Mt. Rainier National Park, Washington State – Sept. 26th 2016 10:22pm ©Cascade Wilderness Photography | Jesse Connor](image)

(Continued from page 6) Parting words from your editor

![2nd Image masked](image)

![Final Image](image)
Celebrating Spitzer's Sweet Sixteen

Spitzer Space Telescope launched into orbit around the Sun on Aug. 25, 2003. Since then, the observatory has been lifting the veil on the wonders of the cosmos, from our own solar system to faraway galaxies, using infrared light.


Image Credit: NASA/JPL-Caltech