THE ASTRONEWS

Volume 72, Issue 7

July 2022

www.hawastsoc.org

A word from your editor by Sapavith 'Ort' Vanapruks

Covid-19 Notice

As Oahu COVID-19 case count daily average continues to stay high (750+), our HAS monthly meeting will continue to be an online meeting. Our public star party and school star party is also on hold. Let's hope that situation gets better by this summer so we can all go back to a similar life as 2019. At that time, we will announce it on our HAS website and in the AstroNews. Meanwhile, we will continue to have the club member only star party. We will be limiting the club party to the key master and 24 extra members. All attendees must be fully vaccinated. The monthly club meeting is now being done remotely via Zoom. Please check your email and website for an update.

Most of the talk in June has been about the 5 planets (Jupiter, Mercury, Mars, Saturn, & Venus) alignment in the morning sky. However, we did have a super-strawberry Moon. We also have Milky Way from 8:43 PM until 4:28 AM. Many in the east coast did have their MW photos photobombed by SpaceX Global Star FM15 mission. It creat-

Super Strawberry Full Moon of June 2022 (Pink layer added)

(Continued on page 10)

Inside this issue:

Upcoming Events:

- The next Board meeting is Sun., July 3rd 3:30 PM. (**Zoom Meeting**)
- The next meeting is on Tue., July 5th ~~at the Bishop Museum~~ at 7:30 PM. —**Zoom Meeting**
- Bishop Museum's planetarium shows are every 1st Saturday of the month at 8:00 PM (**Online**) www.bishopmuseum.org/calendar

President's Message
July 2022

COVID infections peaked around the first of June in Hawaii and have been trending downward since then. I hope that continues and that we can resume meeting in the planetarium in August. We will announce that on our website and in the Zoom invitation if we decide to do that.

Have you seen the array of planets in the predawn sky? All the bright planets in our solar system appear in their order of increasing distance from the Sun. I don't have a good view to the east, so I haven't been able to spot Mercury, but Venus, Mars, Jupiter, and Saturn are visible from my house just as the twilight sky is beginning to brighten. If you pick the right day to look, you can also see the Earth-Moon system (represented by the Moon) between Venus and Mars. As Mercury and Venus return to prograde motion, the separations between each adjacent pair of planets will increase.

Of course, there is no particular significance to such an alignment, but it's of interest if for no other reason than that it's an unusual coincidence. It could lead some people to take notice and think about the night sky and its changing appearance, and it's somehow satisfying and comforting to see the planets in that natural order.

There is plenty of serious purpose to astronomy, but much of what we do as amateur astronomers is for the personal effect it has on us. The grandeur of Jupiter, the enchanting beauty of Saturn, the excitement of seeing a bright meteor, the awe-inspiring sight of a globular cluster or galaxy are familiar but unique to each of us. Photons may have taken billions of years to reach our eyes, but there is no speed limit to the imagination. In our minds we can instantly travel across the universe or travel into and back out of a black hole or do any number of other impossible things. We are astronomers because nature inspires us, and we are free to take from our observations of it what is most meaningful to ourselves.

Hawaiian Astronomical Society
P.O. Box 17671
Honolulu, Hawaii 96817

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 last Wednesday of each month. We are not responsible for unsolicited artwork.

Observer's Notebook—July 2022 by Ort

Planets Close to the Moon
Times are Hawaii Standard Time

Jul 15, 13h, Moon 3.8° SE of Saturn; 149° from Sun in morning sky; magnitudes -12.0 and 0.5
Jul 17, 18h, Moon 2.97° SE of Neptune; 120° from Sun in morning sky; magnitudes -11.1 and 7.9
Jul 18, 18h, Moon 2.02° SE of Jupiter; 107° and 108° from Sun in morning sky; magnitudes -10.7 and -2.6
Jul 21, 7h, Moon 1.01° N of Mars; 77° and 78° from Sun in morning sky; magnitudes -9.5 and 0.3; occultation
Jul 21, 21h, Moon 0.26° NNE of Uranus; 71° from Sun in morning sky; magnitudes -9.2 and 5.8; occultation
Jul 26, 5h, Moon 4.2° N of Venus; 24° and 23° from Sun in morning sky; magnitudes -6.1 and -3.9
Jul 29, 15h, Moon 3.4° NNE of Mercury; 15° and 14° from Sun in evening sky; magnitudes -5.3 and -0.7

Other Events of Interest
Times are Hawaii Standard Time

Jul 3, 19h, Earth at aphelion; 1.0167 AU from Sun
Jul 12, 14h, Moon at perigee; distance 56.02 Earth-radii; nearest in year; only 9.5 hours before Full Moon
Jul 16, 9h, Mercury at superior conjunction with the Sun; 1.333 AU from Earth; latitude 6.39°
Jul 18, 4h, Mars and Neptune at heliocentric conjunction; longitude 353.7°
Jul 20, 20h, Winter solstice for Mars north hemisphere
Jul 25, 19h, The equation of time is at a minimum of -6.55 minutes
Jul 26, 0h, Moon at apogee; distance 63.70 Earth-radii

Planets in July

☿ Mercury

Low morning planet early July and low evening planet at the end of the month. Tricky to see.

♀ Venus

Morning planet rising nearly two hours before sunrise. Thin crescent Moon nearby on 26 and 27 July.

♂ Mars

Brightening morning planet. Close to Uranus at the end of July.

♃ Jupiter

Bright morning object in Cetus, the Whale, improving throughout the month. Waning gibbous Moon close on 19 July.

♄ Saturn

Improving morning planet. Bright gibbous Moon nearby on 15/16 July.

♅ Uranus

Morning planet, improving through July. Mars very close at the end of the month.

♆ Neptune

Neptune is best seen at the end of the month, south of the Circlet asterism in Pisces.

♇ Pluto (Dwarf Planet)

is visible between 21:25 and 04:31 when it rises to an altitude of 21° above your south-eastern horizon.

4—Vesta (Asteroid)

– is visible in the morning sky, becoming accessible around 23:46, when it reaches an altitude of 21° above your south-eastern horizon.

Meeting Minutes

H.A.S. Secretary

June 7th, 2022 7:30 PM (Zoom Meeting)

Andy Stroble

Meeting called to order at 7:34 pm. By President Chris Peterson. 16 participants were present.

Minutes of the May meeting were adopted.

New member William Barr attended.

A straw poll was taken, on whether anyone would physically attend a hybrid meeting in the future. Three persons were willing.

Discussion of Tau Herculid meteor shower, the result of a now broken comet. Ort and Tom observed about 20 over an hour.

May 15 offered a partial lunar eclipse, but it rose behind Haleakala. Ort shared a composite photo.

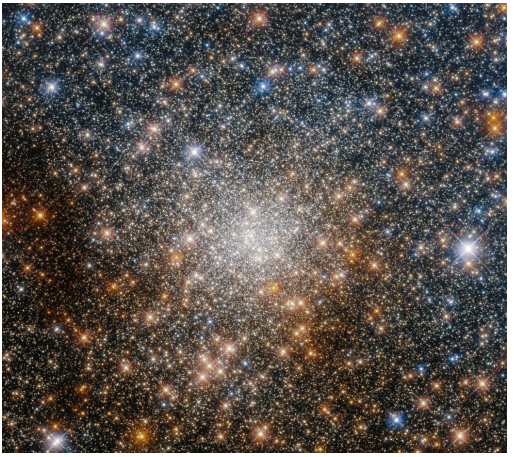
Reports on the ‘Ohana Stargazing at SALT in Kaka‘ako were given

Marufa Bhuiyan shared her experiences in analog astronauting and a visit to Biosphere 2.

In other news, the Mars InSight lander may be failing due to dust on its solar panels, some galaxies that lack dark matter have been found, and the James Webb Space Telescope is ready to start capturing images.

Tom has some swag from the LROC conference, for distribution during outreach. Vice President Polly announced we will have a speaker for the July meeting.

Adjourned at 9:00 pm. There were 22 participants.
Faithfully submitted, James Andy Stroble, Secretary.



A Sea of Stars Like Sequins

Bright-white stars dot the entire scene but are concentrated at the center of the image. Gold stars dot periphery with more filling the bottom half of the image. A smattering of blue-white stars with most in the upper half of the image.

The Hubble Space Telescope captured this glittering scene using its Wide Field Camera 3 and Advanced Camera for Surveys.

Image credit: ESA/Hubble & NASA, R. Cohen

July 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3 BoD Meeting 3:30 PM Zoom	4 Indep. Day	5 Club Meeting 7:30 PM Zoom	6  1st Qtr 4:14 PM	7	8	9
10	11	12	13  Full Moon 8:37 AM	14	15	16
17	18	19	20  3rd Qtr 4:18 AM	21	22	23 Club Star Party Dillingham Airfield 7:00 PM
24	25	26	27	28  New Moon 7:54 AM	29	30 Club Star Party Dillingham Airfield 7:00 PM
31	Notes:					

<<Upcoming Star Parties>>

Club Party-Dillingham July 23 —7:00 PM
Club Party Dillingham July 30 —7:00 PM
Public Party Geiger/Kahala July 9 — CANCELLED

Upcoming School Star Parties

NASA's Night Sky Notes

Find Hercules and His Mighty Globular Clusters

By David Prosper

Hercules is one of the standout heroes of Greek mythology, but his namesake constellation can be surprisingly hard to find - despite being one of the largest star patterns in our night skies! Once you find the stars of Hercules, look deeper; barely hidden in the space around his massive limbs and "Keystone" asterism are two beautiful globular star clusters: M13 and M92!

Since the constellation itself is relatively dim but bordered by brighter constellations, you can find the stars of Hercules by looking between the bright stars Vega and Arcturus. They are fairly easy to identify, and we have tips on how to do so in previous articles. Vega is the brightest star in the constellation Lyra and one of the three stars that make up the Summer Triangle (June 2020: Summer Triangle Corner: Vega). Arcturus is the brightest star in the constellation Boötes, and can be found by "arcing to Arcturus" from the handle of the Big Dipper (May 2021: Virgo's Galactic Harvest). You may be able to Hercules's "Keystone" asterism first; this distinct pattern of four stars is traditionally shown as the torso of the great hero, though some illustrators prefer marking the Keystone as the head of Hercules. What pattern do you see in the stars of Hercules?

Globular star clusters appear "fluffy," round, and dense with stars, similar to a dandelion gone to seed, in contrast to the more scattered and decentralized patterns of open clusters. Open clusters are generally made up of young stars that are gradually spreading apart and found inside our Milky Way galaxy, while globular clusters are ancient clusters of stars that are compact, billions of years old, bound to each other and orbit around our galaxy. Due to their considerable distance, globular clusters are usually only visible in telescopes, but one notable exception is M13, also known as the Great Cluster or Hercules Cluster. During very clear dark nights, skilled observers may be able to spot M13 without optical aid along the border of the Keystone, in between the stars Zeta and Eta Herculis - and a bit closer to Eta. Readily visible as a fuzzy "star" in binoculars, in telescopes M13 explodes with stars and can fill up an eyepiece view with its sparkling stars, measuring a little over half the diameter of a full Moon in appearance! When viewed through small telescopes, globular clusters can appear orblike and without discernable member stars, similar in appearance to the fuzzy comae of distant comets. That's why comet hunters Edmund Halley and Charles Messier discovered and then catalogued M13, in 1714 and 1764 respectively, marking this faint fuzzy as a "not-comet" so as to avoid future confusion.

While enjoying your view of M13, don't forget to also look for M92! This is another bright and bold globular cluster, and if M13 wasn't so spectacular, M92 would be known as the top celestial sight in Hercules. M92 also lies on the edge of naked-eye visibility, but again, binoculars and especially a telescope are needed to really make it "pop." Even though M92 and M13 appear fairly close together in the sky, in actuality they are rather far apart: M13's distance is estimated at about 25,000 light years from Earth, and M92's at approximately 27,000 light years distant. Since M13 and M92 appear so close together in our skies and relatively easy to spot, switching between these two clusters in your scope makes for excellent star-hopping practice. Can you observe any differences between these two ancient clusters of stars?

Globular clusters are closely studied by astronomers for hints about the formation of stars and galaxies. The clusters of Hercules have even been studied by NASA's space telescopes to reveal the secrets of their dense cores of hundreds of thousands of stars. Find their latest observations of globular clusters - and the universe - at nasa.gov.

(Continued on page 9)

Meteor Log—July 2022

by Tom Giguere

Three meteor showers grace the July skies with the Southern δ-Aquariids (005 SDA) being the most active. The shower belongs to the most active sources in the southern hemisphere. Radio work can pick up the SDA as well, and indeed the shower has sometimes given a surprisingly strong radio signature. Data collected by experienced observers under exceptional conditions in 2008 and 2011 show that the maximum ZHR of the southern δ-Aquariids is around 25 for about two days ($\lambda = 125^\circ - 127^\circ$). The ZHR exceeds 20 between $\lambda = 124^\circ$ and 129°. During the maximum there are numerous bright SDA meteors visible, causing $r \approx 2.5$ around the maximum and $r \approx 3.1$ away from the peak period. In the past there were also outbursts observed: Australian observers reported a ZHR of 40 in the night 1977 July 28/29; again a ZHR of 40 was observed for 1.5 hours on 2003 July 28/29 from Crete (the ZHR before and after the outburst was around 20). Unfortunately, the 2003 observation was not confirmed by other observers active in the period. The extensive 2011 data set showed no ZHR enhancement at the same solar longitude as in 2003. The activity level and variations of the shower need to be monitored. New Moon on July 28 is ideal for all optical observations. Our southerly Hawaii location is a favorable location for this shower. Credit: International Meteor Organization.

Speaking of observing meteor by radio… I recently ran across a newspaper article when a few members of Meteor Group Hawaii observed the Perseids by radio back in 1994. We observed from the old Tsunami Warning Center in Ewa Beach. BTW, Mike Morrow always had a way with words; I thought the meteor actually were pretty spectacular!

(Continued on page 11)

Phases of the Moon (courtesy timeanddate.com)

First Quarter	Full Moon	Last Quarter	New Moon
July 6	July 13	July 20	July 28

Shower	Activity	Maximum		Radiant		V_∞	*r*	ZHR
		Date	$\lambda_\odot$	α	δ	km/s		
Piscis Austrinids (183 PAU)	Jul 15-Aug 10	Jul 28	125°	341°	-30°	35	3.2	5
South. δ-Aquariids (005 SDA)	Jul 12–Aug 23	Jul 30	127°	340°	-16°	41	2.5	25
α-Capricornids (001 CAP)	Jul 03–Aug 15	Jul 30	127°	307°	-10°	23	2.5	5

Three showers, plenty of observing options this 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

by Peter Besenbruch

Cash Flow - 4/11/02022 to 6/10/2022

Beginning Balance	$4,709.99
Money into selected accounts comes from	
Donation	$410.00
Membership – Electronic	$160.00
Membership - Electronic - Student	$12.00
Membership – Family	$30.00
Total Money In	$612.00

Money out of selected accounts goes to	
Astronews	$284.14
Award	$75.00
Office-supplies	$12.16
Subscription - Astronomy	$102.00
Total Money Out	$473.30

Difference	$138.70
Ending Balance	**$4,848.69**

Here are the financials up through June 10.

Thanks for the membership renewals (and donations) and a welcome to the new folks. The biggest expense was a payment to the Astronews editor, Ort, for his mailing and printing expenses. The biggest "donation" was actually the sale of a donated telescope to one of our members. May he got lots of use out of it. Telescopes are a lot like cars in this market: New scopes are often out of stock, and used ones are expensive.

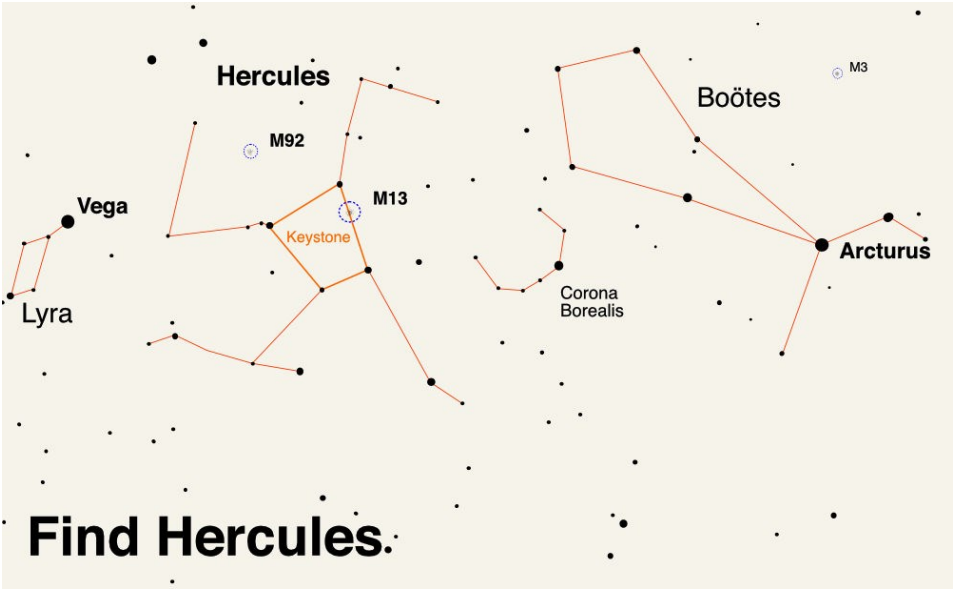
A special shout out to Steve Chun, who after he redid much of the HAS Web site in a more modern (and phone friendly) style, had to go back and redo sections of it, because the external sources he tapped into changed their rules. He put a fair bit of time into it.

Next month will show the Astronomical League dues, and the month after, the liability insurance bill.

On the Covid front, the official case count has dropped to 602 per day for Oahu, though that hasn't been reliable for several months. Hospitalizations and ICU occupancy are largely unchanged (138 and 8). Here's hoping for all the numbers to drop, and for the quick production of modified vaccines.

(Continued from page 6) NASA's Night Sky Notes

Composite image of the dense starry core of M92 imaged in multiple wavelengths. While your own views of these globular clusters won't be nearly as crisp and detailed, you might be able to count some of its member stars. How far into their dense cores can you count individual stars? Credits: ESA/Hubble & NASA; Acknowledgment: Gilles Chapdelaine. Source: https://www.nasa.gov/feature/goddard/2017/messier-92



Look up after sunset during summer months to find Hercules! Scan between Vega and Arcturus, near the distinct pattern of Corona Borealis. Once you find its stars, use binoculars or a telescope to hunt down the globular clusters M13 and M92. If you enjoy your views of these globular clusters, you're in luck - look for another great globular, M3, in the nearby constellation of Boötes. Image created with assistance from Stellarium: stellarium.org

(Continued from page 1) Editor Note
ed a red glow like Aurora in the photo. There were 3 SpaceX missions that weekend (1 in California and 2 in Florida).

According to Space.com, the rare alignment 5 viewable planets that happened in June 2022 will not happen again until 2040 (another 18 years) (See rare alignment of 5 planets and moon in stunning photo | Space). Luckily there were several days with clear enough morning that I could get a decent photo of 5 planets and a moon on Friday, June 23, 2022. However, if you zoom in with your star chart apps, you would notice that Uranus and Neptune are in the same morning sky.

I have not had a chance to do any Milky Way photo yet this year. However, our former secretary, Tamara (Tammy) Weese did capture one at Eagles Crag, UT. She was using a Nikon D5600. One frame, no stacking (f/3.5, 20 sec., ISO-6400, 18 mm)

(Continued from page 7) Meteor Logs

BY CRAIG T. KOJIMA, Star-Bulletin

Hawaii Meteor Group members Tom Giguere, left, and Mike Morrow set up a ham receiver at the Pacific Tsunami Warning Center in Ewa Beach yesterday to monitor the Perseid meteor shower.

Meteors 'lovely,' not spectacular

BY HELEN ALTONN
Star-Bulletin

Last night's annual Perseid meteor shower produced some "lovely, bright meteors" but it wasn't a spectacular event, says Mike Morrow, Meteor Group Hawaii director.

Morrow's team monitored the meteors by radio at the Pacific Tsunami Warning Center in Ewa Beach.

He said it wasn't as rich as last year. "There was no big maximum we could find. We think it was less than a normal average shower."

Sky watchers had expected to see as many as 80 to 100 meteors per hour last night when the Earth passed through the thickest part of debris left behind by the Swift-Tuttle comet.

The peak was supposed to be between 10 p.m. and 1 a.m. Bright meteors were seen in pairs but there wasn't any big outburst, Morrow said.

Viewers under clear skies and away from city lights still may see Perseid meteors for a few days after midnight.

The Perseids literally means children of the constellation Perseus, which is in the northern sky.

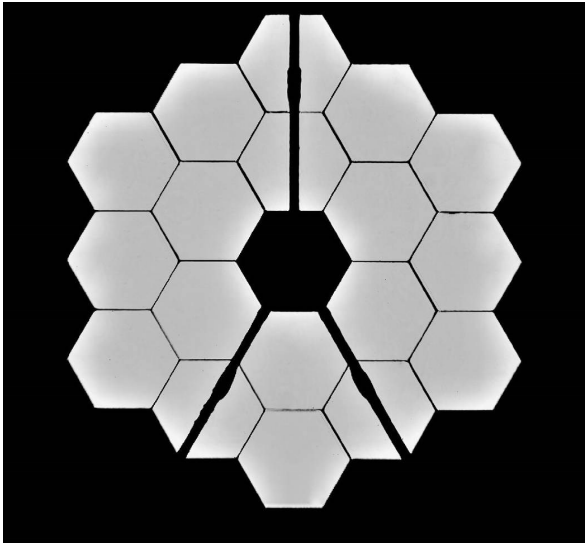
The summer show has been happening at the same time each year for thousands of years. But only 130 years ago were the Perseids linked to debris from a comet.

Mike Morrow and I observe meteors by radio in Ewa Beach, 1994

When Galaxy Clusters Collide
Abell 2146, a pair of colliding galaxy clusters located about 2.8 billion light years from Earth.

Image Credit: X-ray: NASA/CXC/Univ. of Nottingham/H. Russell et al.; Optical: NAOJ/Subaru

H.A.S.
P.O. Box 17671
Honolulu, HI 96817



Mirrors Aligned: Webb Telescope's First Full-Color Images Due in July

After completing two additional mirror alignment steps in March 2022, the team confirmed the James Webb Space Telescope's optical performance will be able to meet or exceed the science goals the observatory was built to achieve.

Image Credit: NASA/STScI