THE ASTRONEWS

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June 2024

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A word from your editor by Sapavith 'Ort' Vanapruks

HAS is getting more requests for school & Bishop Museum events. As much as the Board of Directors would like to help with all events, it is just not possible. With summer break arriving, we may not have school events until fall. We may have groups such as Boy Scout or Girl Scout requests for an event. The "3rd Friday monthly evening Planetarium 2024" at Bishop Museum on June 21th, 2024, from 6:00 PM - 9:00 PM is still going on (Full Moon). So, if you have a telescope and the event is in your area, please sign up and help.

All Star Parties at Dillingham Airfield, Kahala Community Park, and Geiger Communities Park were wiped out in the month of May due to bad weather. Let's hope we have a better month in June. On Monday, June 3rd, 2024, we will have 6 planets alignment in the morning. However, Venus & Jupiter will rise at the same time as the Sun in Hawaii. You can read more about it in https://www.astronomy.com/observing/how-to-see-six-planets-line-up-in-june/.

There is a message from Hawaiian Astronomical Society VP, William Barr. It will be on page 4.

The Coronal Mass Ejection (CME) from Sunspot AR3664 had provided a spectacular aurora for many people to see on the evening of Friday, 5/10/2024, into the morning of Saturday, 5/11/2024.

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Inside this issue:

Upcoming Events:

- The next Board meeting is Sun., Jun 2nd 3:30 PM. (**Zoom Meeting**)
- The next meeting is on Tue., Jun 4th at the Bishop Museum at 7:30 PM. —**Hybrid (In person and Zoom) Meeting**
- Bishop Museum's planetarium show "The Star Tonight" is every 3rd Friday, 6/21/2024, of the month at 7:00 PM

President's Message
June 2024

The Moon has always held a special place in human mythology, folklore, and imagination. Even many non-human animals can't help but be affected by its illumination of the night sky. In our modern scientific world, we are continuing to learn more ways that the Moon is important to Earth.

It has long been recognized that tides, greatly influenced by the Moon's close proximity to and monthly orbit around Earth, probably played a role in the transition of life from the ocean to land. The increased size of transitional zones between ocean and land and between salty and fresh water created by tides provided a variety of niches for evolving amphibian life to occupy.

I mentioned a few months ago the recent discovery of two objects in Earth's mantle that are thought to be remnants of Theia, the Mars-size impactor into the early Earth that produced the Moon. Now it has been proposed that the impact was what initiated plate tectonics on Earth.

Earth's plate tectonics are unique in our solar system. Europa has shifting crustal blocks of ice, but no subduction or mid-ocean ridges of which we are aware. Venus, near twin of Earth in size and composition, seems to have undergone a planet-wide volcanic resurfacing hundreds of millions of years ago, and some indirect evidence suggests that plate tectonics may have briefly operated there (as well as on Mars) long before that, but there is no evidence of such activity occurring today.

It is possible that life on Earth developed along the mid-ocean ridges where magma provides the heat energy to drive chemical reactions in a stable deep-ocean environment. If that is true, plate tectonics might make the development of life much more likely. If a late giant impact is what got Earth's plate tectonics started, that might mean that life is rare in the universe.

Of the extra-solar planets discovered so far, Earth-like planets in the habitable zone are not common. As we discover more, we might want to pay special attention to any with large

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

Observer's Notebook—June 2024 by Ort

Planets Close to the Moon
Times are Hawaii Standard Time

Jun 2, 12h, Moon 2.16° NNW of Mars; 48° from Sun in morning sky; magnitudes -8.1 and 1.0
Jun 4, 13h, Moon 3.6° NNW of Uranus; 21° and 20° from Sun in morning sky; magnitudes -6.1 and 5.8
Jun 4, 23h, Moon, Jupiter, and the Pleiades within circle of diameter 5.21°; about 15° from the Sun in the morning sky; magnitudes -6, -2, 3
Jun 5, 3h, Moon 4.5° N of Jupiter; 13° from Sun in morning sky; magnitudes -5.3 and -2.0
Jun 5, 4h, Moon, Mercury, and Jupiter within circle of diameter 4.77°; about 12° from the Sun in the morning sky; magnitudes -5, -1,
Jun 5, 7h, Moon 4.5° N of Mercury; 11° from Sun in morning sky; magnitudes -5.1 and -1.3
Jun 6, 4h, Moon 4.5° N of Venus; 5° and 1° from Sun in evening sky; magnitudes -4.4 and -3.9
Jun 27, 6h, Moon 0.33° NE of Saturn; 107° from Sun in morning sky; magnitudes -10.7 and 1.1; occultation
Jun 27, 23h, Moon 0.31° N of Neptune; 97° from Sun in morning sky; magnitudes -10.4 and 7.9; occultation

Other Events of Interest
Times are Hawaii Standard Time

Jun 1, 14h, Moon at perigee; distance 57.71 Earth-radii
Jun 3, 10h, Mercury, Jupiter, and the Pleiades within circle of diameter 5.09°; about 13° from the Sun in the morning sky; magnitudes -1, -2, 3
Jun 4, 1h, Mercury 0.12° SE of Jupiter; 12° from Sun in morning sky; magnitudes -1.1 and -2.0
Jun 4, 5h, Venus at superior conjunction with the Sun; 1.735 AU from Earth; latitude -0.14°
Jun 6, 14h, Daytime Arietid meteors; ZHR 30; near New Moon
Jun 10, 20h, Mars and Neptune at heliocentric conjunction; longitude 357.9°
Jun 17, 21h, Mercury, Venus, and M35 cluster within circle of diameter 1.21°; only about 4° from the Sun; magnitudes -2, -4, 5

Planets in June

☿ Mercury

recently passed behind the Sun at superior solar conjunction. From Honolulu, it is not readily observable since it is very close to the Sun, at a separation of only 1° from it.

♀ Venus

recently passed behind the Sun at superior solar conjunction. From Honolulu, it is not readily observable since it is very close to the Sun, at a separation of only 2° from it.

♂ Mars

is currently emerging from behind the Sun. From Honolulu, it is visible in the dawn sky, rising at 02:41 (HST) – 3 hours and 5 minutes before the Sun.

♃ Jupiter

recently passed behind the Sun at solar conjunction. From Honolulu, however, it is visible in the dawn sky, rising at 04:27 (HST)

♄ Saturn

is currently emerging from behind the Sun. From Honolulu, it is visible in the dawn sky, rising at 00:23 (HST).

♅ Uranus

recently passed behind the Sun at solar conjunction. From Honolulu, it is not observable.

♆ Neptune

is currently emerging from behind the Sun. From Honolulu, it is visible in the dawn sky, rising at 00:53 (HST).

♇ Pluto (Dwarf Planet)

is visible in the morning sky, becoming accessible around 23:40, when it reaches an altitude of 21° above your south-eastern horizon.

⚳ 1—Ceres (Asteroid)

is visible in the morning sky, becoming accessible around 23:04, when it reaches an altitude of 21° above your south-eastern horizon

Meeting Minutes

H.A.S. Secretary

May 7th, 2024 7:30 PM (Bishop Museum Planetarium and Zoom Meeting)

Andy Stroble

Meeting called to order at 7:30pm by President Chris Peterson.
Minutes of previous meeting unanimously adopted, with the correction that persons where two total eclipse intersect may have experienced totality twice in seven years, they do not get do so every seven years.

Attending for the first time were Steve Doyle from the Big Island, and Diane Squyers from the Giguere Eclipse Expedition.

Meeting was taken up with reports on the April 8th total solar eclipse.
Ort shared photos taken from Sandy Beach, using a PST and other equipment. Sue Girard could not get sound working on zoom. Shane went to Texas, but then headed to Indianapolis, and viewed from a BSA site, and took some photos.
Tom, of the Giguere Expedition, shared detailed reporting on logistics, routes, shot-up mirrors, and weather forecasting. And a shot of the shadow on the earth from the LROC! Joanne, also in Texas, shared pictures of an eclipse collander, NASA in Houston, and the origins of the "Garn" scale. Greg shared pictures of the eclipse (including the diamond ring) taken in the parking lot of the Dallas Holiday Inn, using bracketing on a hand-held camera.
Steve Chun showed some solar photography, of the eclipse and of sunspots, with K band filters, some exhibiting faculae.

Meeting adjourned at 9:02 pm.
There were 11 persons in person, and 10 unique zoom logins.

Faithfully submitted,
James Andy Stroble, Secretary.
Honolulu, Hawaii

(Continued from page 2) President's Message
moons. Until we find another example of life beyond Earth, we won't know how important the creation of our Moon was to the beginning of life. I wouldn't be surprised, though, to find out that there are more ways the Moon has shaped its development.

A message from Hawaiian Astronomical Society VP, William Barr

I would like to offer my 3D printer as a helpful benefit to HAS members. It is relatively easy to create various telescope accessories. As you can see from the image below, almost anything you need for your telescope can be 3D printed. These parts can range in cost from $10 to $50 or more if purchased commercially, particularly adapter.
Examples of printable items include:

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June 2024

◄ May | Jul ►

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 Club Party Dillingham Airfield Gate Close 7:00pm
2 BoD Meeting 3:30pm Zoom	3	4 General Meeting Bishop Museum Hybrid 7:30pm	5	6  New Moon 2:37am	7	8
9	10	11	12	13  1st Qtr 7:18pm	14 Flag Day	15 Public Party Kahala / Geiger Sunset 7:14pm
16 Father's Day	17	18	19 Juneteenth	20 Summer Solstice (Summer Begins)	21  Full Moon 3:07pm Bishop Museum 3rd Fri. Planetarium 6:00pm - 9:00pm	22
23	24	25	26	27	28  3rd Qtr 11:53am	29 Public Party Dillingham Airfield Gate Close 7:00pm
30	Notes:					

<<Upcoming Star Parties>>

Club Party Dillingham June 1 —7:00 PM
Public Party-Dillingham June 29 — 7:00 PM
Public Party Geiger/Kahala June 15 — 7:00 PM

Upcoming School Star Parties

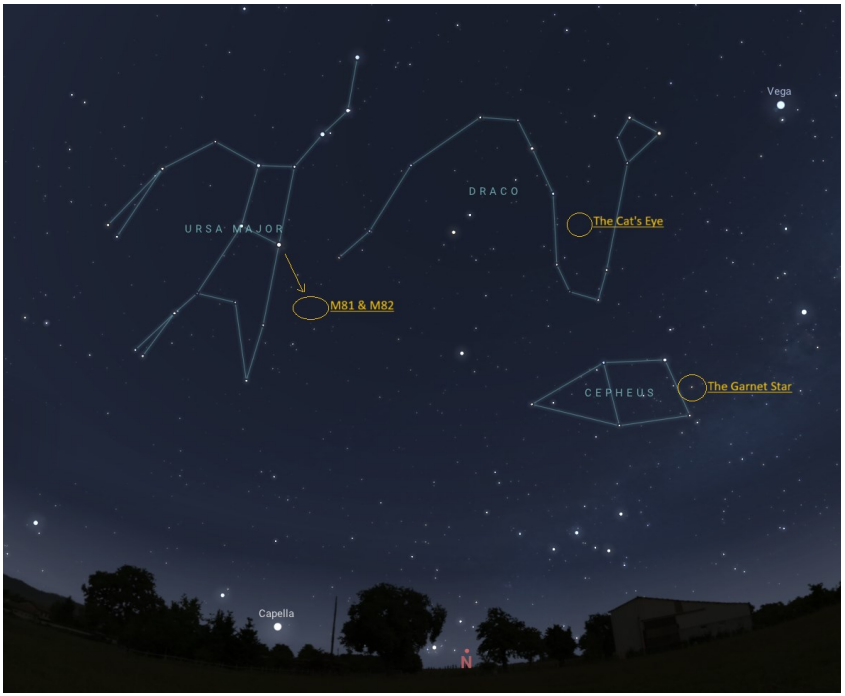
Date	Time	Location

NASA's Night Sky Notes

Constant Companions: Circumpolar Constellations, Part III

By Kat Troche

In our final installment of the stars around the North Star, we look ahead to the summer months, where depending on your latitude, the items in these circumpolar constellations are nice and high. Today, we'll discuss **Cepheus**, **Draco**, and **Ursa Major**. These objects can all be spotted with a medium to large-sized telescope under dark skies.



From left to right: Ursa Major, Draco, and Cepheus. Credit: Stellarium Web.

- **Herschel's Garnet Star:** Mu Cephei is a deep-red hypergiant known as The Garnet Star, or Erakis. While the star is not part of the constellation pattern, it sits within the constellation boundary of Cepheus, and is more than 1,000 times the size of our Sun. Like its neighbor Delta Cephei, this star is variable, but is not a reliable Cepheid variable. Rather, its brightness can vary anywhere between 3.4 to 5.1 in visible magnitude, over the course of 2-12 years.

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Meteor Log—June 2024

by Tom Giguere

A look back at the May Eta Aquarids:

Sapavith (Ort) & I took a chance and went out to Lanai Lookout to observe the Eta Aquarids Meteor Showers on Saturday, 5/4/2024. The shower peak occurred on Sunday morning, 5/5/2024. Ort's weather app predicted awful weather for the peak so we opted for the more favorable weather the day before. The Eta Aquarids radiant rose around 2:10 AM. I arrived around 3:20 AM. Ort was about 10 minutes behind. It was partly cloudy, but totally cleared out around 3:50 AM. We saw 6 Eta Aquarids and 3 sporadic meteors. Only 1 of 140 of Ort's photos caught a meteor. I captured 2 out of 636 photos. Ort had a better ratio. Normally, exposures can be anywhere from 10 to 30 seconds, but I was experiencing a camera issue which set all of my exposures to 1.66 seconds. This short exposure was long enough to capture the very swift Eta Aquarids (66 km/s), while capturing slow moving satellites on many sequential images.

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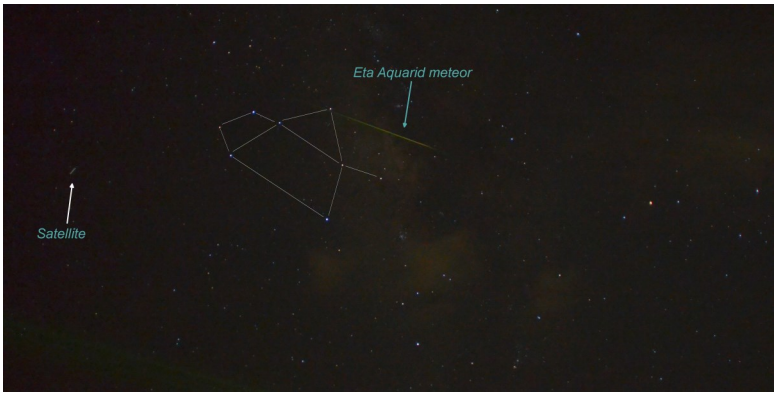

The Eta Aquarids were challenging to observe, mainly due to the Kona weather conditions that we were experiencing. We look forward to observing this shower closer to the peak in future years.

Phases of the Moon (courtesy timeanddate.com)

First Quarter	Full Moon	Last Quarter	New Moon
June 13	June 21	June 28	June 6

Shower	Activity	Maximum		Radiant		V_∞	*r*	ZHR
		Date	λ	α	δ	km/s		
Dayt. Arietids (171 ARI)	May 14 - Jun 24	Jun 07	76.7°	43°	+24°	38	2.8	30
June Bootids (170 JBO)	Jun 22 - Jul 02	Jun 27	95.7°	224°	+48°	18	2.2	Var

Put the η-Aquariids (ETA) on your May '25 observing list … 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 - 4/10/2024 to 5/9/2024

Beginning Balance	**$6,332.73**
Money into selected accounts comes from	
Donation Membership – Electronic Membership – Family	$164.00 $280.00 $32.00
Total Money In	**$476.00**

Money out of selected accounts goes to	
Total Money Out	**$0.00**

Difference	$476.00

Ending Balance	**$6808.73**

Here are the financials up through May 9.

Thanks to everyone who paid, renewed, and donated. There were several donations, and another will show up next month.

Covid wastewater figures have risen sharply the last month on Oahu. Covid has again passed the Flue and RSV in hospital testing. Hospitals no longer need to report Covid admissions, but some still do, and they are up. Overall, the numbers do not reflect things like graduations, so the numbers will continue to rise for a while. The department of health has issued a "yellow alert" in response.

(Continued from page 4) Message from VP

- Telescope covers and dust caps
- Bahtinov masks
- Solar finders
- Cord management solutions
- Mount or even image train adapters

I offer this to HAS members with the qualificattions that you ask for it in person at one of the meetings or star parties, and that you also pick it up from the same.
In other words, I am not offering a mail order service.
Some things will need measuring and planning to get right.
It would be nice to do an OpenAstroTracker with someone. This is a multi-part, multi-material project that would take some time: https://wiki.openastrotech.com/en/OpenAstroTracker

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

This composite of data from NASA's Chandra X-ray Observatory and Hubble Space Telescope gives astronomers a new look for NGC 6543, better known as the Cat's Eye nebula. This planetary nebula represents a phase of stellar evolution that our sun may well experience several billion years from now. Credit: X-ray: NASA/CXC/ SAO; Optical: NASA/STScI

- **The Cat's Eye Nebula:** Labeled a planetary nebula, there are no planets to be found at the center of this object. Observations taken with NASA's Chandra X-ray Observatory and Hubble Space Telescopes give astronomers a better understanding of this complex, potential binary star, and how its core ejected enough mass to produce the rings of dust. When searching for this object, look towards the 'belly' of Draco with a medium-sized telescope.

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The Cigar Galaxy. Credit: NASA, ESA, CXC, and JPL-Caltech

(Continued from page 9) NASA's Night Sky Notes

- **Bode's Galaxy and the Cigar Galaxy:** Using the arrow on the star map, look diagonal from the star Dubhe in Ursa Major. There you will find Bode's Galaxy (Messier 81) and the Cigar Galaxy (Messier 82). Sometimes referred to as Bode's Nebula, these two galaxies can be spotted with a small to medium-sized telescope. Bode's Galaxy is a classic spiral shape, similar to our own Milky Way galaxy and our neighbor, Andromeda. The Cigar Galaxy, however, is known as a starburst galaxy type, known to have a high star formation rate and incredible shapes. This image composite from 2006 combines the power of three great observatories: the Hubble Space Telescope imaged hydrogen in orange, and visible light in yellow green; Chandra X-Ray Observatory portrayed X-ray in blue; Spitzer Space Telescope captured infrared light in red.

Up next, we celebrate the solstice with our upcoming mid-month article on the Night Sky Network page through NASA's website!

(Continued from page 1) Editor Note

As per spaceweather.com website, Sunspot AR3664 started to become a large sunspot on 5/7/2024 by gaining its size by more than double. On 5/8/2024, A NOAA forecast model predicts the CME will reach Earth late on May 10th, sparking G1- to G2-class geomagnetic storms on May 11th. On 5/9/2024, A NOAA forecast model predicts that two or three of these CMEs could merge to form a Cannibal CME, which will strike Earth during the early hours of May 11th. Cannibal CMEs are notoriously good at sparking strong geomagnetic storms and low latitude auroras. In fact, NOAA is now predicting a G4-class (Severe) storm on May 11th when the Cannibal arrives. Come 5/10/2024, spaceweather.com website stated that the biggest geomagnetic storm in almost 20 years is underway now. It has reached category G5--an extreme event. Sky watchers with dark skies may be able to see and photograph auroras even at low latitudes.

People from around the world could see the aurora in their night sky. My cousin in Omaha drove north to Ponca Hill about 20 minutes from Omaha and saw it. There was a report that people in Florida Key (Puerto Rico) could see Aurora. Many people in Hawaii saw it also. Subaru telescope even captured it on an Allsky camera.

Image by: Koom de Montjoye with Sumsung Galaxy S20+ with night mode.

So, if you are observing and able to capture any night sky object. You can share it in AstroNews by emailing it to me at astronews@hawastsoc.org with some detail. I will post it.

Clear Night everyone.

(Continued on page 4)

(Continued from page 7) - Meteor Log
The meteor that I captured at 4:23 am grazes the top of the Sagittarius "teapot" on the westside. Interesting that Ort's meteor shoots right through the heart of the Scorpius (Antares). Did we image the same meteor? With my image catching the beginning of the train and Ort's image catching the terminus? We need to check the time of the image; also, comparing satellites in the field of view could help to answer this question. There were many transiting satellites as the morning twilight approached.

Ort's Meteor photo at 4:41 AM. It was not the same meteor as Tom.
It was taken with Canon 90D and Tamron 11-20mm f/2.8
(F-stop: f/2.8, Exposure: 15 Sec, ISO: 3200, Focal Length: 11mm)

(Continued from page 8) Message from VP
That would be a complicated project but the simple things like dust caps, eyepiece covers and such are relatively easy. Many parts already have the files necessary to print them available. Search your part name and 3d printing to see what is out there.
Cost is not an issue for one-offs. For a complicated project we can discuss it.

On another note, I have some topics we should discuss at upcoming meetings:

1) As mentioned at a previous meeting this year there is interest in having a astronomy swap meet. In order to do this we should decide a date (on a meeting night I would think) as soon as possible in order to do so this summer. Would the area above the ishop Museum Planetarium work?

2) We are very fortunate here in Hawaii this year as we will have another solar eclipse this year. On October 2nd there will be an annular eclipse, partial for Hawaii, early in the morning.

Should we again meet at Sandy Beach Park or would members be interested in a club only location in the hills east of Hawaii Kai off of Kamehame Drive? We would have to seek out access permission for this. Is there another suggestion someone has?

3) Possible collaboration with Camp Mokuliea. More details to come.

H.A.S.
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Aurora over Idaho
The aurora turns the sky near Malad City, Idaho, red, purple, and green in this 8-second exposure taken on May 11, 2024.

Image Credit: NASA/Bill Dunford