# AOH Newsletter

# Winter 2020



## News and Notes

Hail and Farewell.

Longtime Board member Greg Deja has moved out of the area. At the annual AOH General Membership meeting, Greg was honored by a resolution of appreciation for his service as a member of the Board of



Directors and as a frequent participant in our outreach programs. Replacing Greg on the Board is Catrina Howatt, who has likewise been active in outreach and who was also elected to serve as AOH Co-treasurer.

#### Loaner Telescopes.

AOH has a number of telescopes from 3-inch refractors to 8-inch Schmidt-Cassegrains which can be loaned out to AOH members. If you are one of our newcomers, or an old-timer who just wants to try something different, contact <u>brent@astrohum</u> or <u>markw@astrohum</u> to see what we can fix you up with.

#### Dues.

In January of 1998 two important things happened: (1) Astronomers announced the startling discovery that the universe's expansion is speeding up, which led to the realization that the universe is permeated by dark energy; and (2) AOH dues were set at \$15. Well, AOH's expenses may not be increasing as fast as the universe is expanding, but they *are* increasing—we now have to buy insurance as a condition of using Kneeland Airport for observing, and we will soon have to begin paying for equipment storage. So at the General Meeting it was decided to raise dues to \$25 per family membership. And, by the way, dues are due at the beginning of the year. So get out the old checkbook and send in your \$25 to AOH at PO Box 351, Eureka, CA 95502. And another thought: need a gift for that hard-to-buy-person you know? How about a gift membership? Get a membership form at <u>www.astrohum.</u> <u>org/membership.html</u>.

#### Thanks.

...to Grace Wheeler who has been the Newsletter Editor for the past four years, and who has written up most of the outreach reports, and who has set the standard for me to aspire to; to Susie Christian, who continues to provide her "Heavenly Bodies" for the Newsletter; to the takers and providers of photographs [GW: Grace Wheeler; CH: Catrina Howatt; MH: Marian Hancock; YK: Yoon Kim]; to Grace Wheeler, Brent Howatt, and Susan Frances for looking over a draft of this Newsletter. And thanks in advance to all you nice people who will send articles, photos, and suggestions for future Newsletters to <u>ken@astrohum.org</u>. I look forward to receiving them.

Ken Yanosko

## **AOH Activities**

#### September 26: Outreach Event for Willow Creek Learning Center

We set up telescopes at Bigfoot Golf and Country Club. Brent gave some introductory remarks; we viewed the bright planets; Becky gave an impromptu talk about the various NASA space missions; Grace gave a talk on the summer constellations; and then we viewed some darksky objects. There were about 50 students and as many teachers and parents. Brent, Grace, Becky, Bea, and Mary participated.

#### October 5: Public Observing at Arts Alive and AOH participation in International Observe the Moon Night

The AOH set up telescopes at the Gazebo from 6-9 p.m, and had long lines of astronomy fans waiting for their turn at a telescope during the entire evening. Visitors saw the craters and mountains of the moon, Venus, Jupiter and the Galilean moons, and Saturn and its moon Titan. The volunteers were Russ (Newtonian), Don (C-6), Grace (C-8, C-6, Astroscan), Yoon (C-8), Bernie (Astroscan), and our newest member Daniela (C-6). In all, we had about 200+ people come by to look



Yoon directed the crowd to the various telescopes. --GW





Russ was our dedicated Moon observer. --GW

Daniela showing Saturn to the Crowd. --GW

through our telescopes. It was a beautiful fall night, and the views of the Moon, Jupiter, and Saturn did not disappoint.

# October 18: Science Night at College of the Redwoods

AOH had a classroom with several indoor activities. We demonstrated diferent types of telescopes (refractor, newtonian, cassegrain) and let kids

play with a couple of Galileoscopes; we set up a solar system display with scale models of the Sun and planets and a couple of orreries; we had a table of astronomy books; we set up a gravity well demonstration; and we had a craft table where people could make planispheres and planet masks. Participants were Grace, Don, Brent, Catrina, Ken, Mark W, Yoon, and Daniela. We were visited by several hundred youths and parents and college students.



*Little planets. --GW* 

#### Science Night, continued



Catrina was in charge of the craft table. --GW



*Daniela ran the gravity well demonstration. --GW* 

#### October 26: Regular Monthly Meeting

There was a threat of a power outage and a threat of high winds but a number of us (Ken, Mark W, Yoon, Dean, Marian, and Grace) went to Kneeland Airport anyway. The high winds never materialized and the power stayed on until after we got home. We saw Mercury, Venus, Jupiter, Saturn, and a number of deep-sky objects (M31, M32, M110, M8, M20, M22, M57, M13, M27) in the fall and last of the summer constellations. We were joined by Connor, a CR student who is taking astronomy. It was a cold and clear evening, and the observing was great.



Yoon, Grace, Mark, Ken, and Dean --MH

#### November 2: Kneeland School Fall Festival

Brent, Catrina, Ken, and Yoon attended this annual event. Catrina set

up a solar system table with posters and models. Yoon, Brent, and Ken set up the gravity well and a couple of Gallileoscopes for the kids to play with, and opened up the observatory for show and tell. Eventually the Moon came into view and we got some great views through the C-14; just before closing it got dark enough to find Saturn for some additional oohs and aahs.



#### November 11: Transit of Mercury at Kneeland Airport

Brent, Mark W, Ken, Yoon, and recently-joined member Paddy gathered at sunrise at Kneeland Airport to view the transit of Mercury (the last one visible from North America until 2049). We were joined by a number of girl scouts and their families: Jocelyn, Alice, John; Avni, Alison, Lizzy; Margot, Megan, Theodore; Reece, Michelle, Ken, Norah. Also present were Marty, "Tofu" Mike, and newest member Tony (who signed up on the spot). The minute planet appeared against a blank solar disk.as the sun rose, and moved across the face of the sun as scheduled.



Mecury in front of the sun, imaged with a Nikon D7000 camera on a Celestron C-8 telescope. --KY

#### November 23: Pizza Party and General Membership Meeting

Our Annual Business Meeting took place at its "customary" location: Babe's Pizza in Cutten. A lively group appeared for pizza, soda, a general membership meeting, and a Board of Directors meeting. Minutes are available at <u>www.astrohum.org/members\_only/reports.php</u>.



*Mark W presenting the "Shining Star" award to Grace, as Jeff, Lisa, and Mark M look on. --YK* 



President Brent (center) running the meeting while former President Russ and newly-elected Board member Catrina exchange information. --YK

# **Upcoming Events**

Note: this is a tentative schedule; many events are subject to rescheduling or cancellation. Check the AOH website at <u>www.astrohum.org/upcoming.html</u> for the latest information.

- December 28: Regular Monthly Meeting. The time and place are to be determined. Weather permitting, we will hold an outdoor observing session. Otherwise we will have an indoor activity of astronomical interest.
- January 4: Public observing at Arts Alive in Eureka. Weather permitting, we will set up scopes at the Gazebo from 6 to 9 pm. Note, in the event of cloudy skies, this event will be self-canceling.
- January 25: Regular Monthly Meeting. The time and place are to be determined. Weather permitting, we will hold an outdoor observing session. Otherwise we will have an indoor activity of astronomical interest.
- February 1: Public observing at Arts Alive in Eureka. Weather permitting, we will set up scopes at the Gazebo from 6 to 9 pm. Note, in the event of cloudy skies, this event will be self-canceling.
- February 18: A Lunar Occultation of Mars is underway at moonrise. Mars will reappear from behind the dark limb of the Moon at 4:30 in the morning while the Moon is still low (5 degrees altitude) in the eastern sky. No official AOH activity is scheduled—observe on your own but be sure to send in some photos.
- February 22: Annual AOH Potluck. We will have our annual gettogether at the Humboldt Area Foundation, 363 Indianola Road, Bayside. Here is the schedule: meet and greet at 5:30; dinner (bring a dish to share and utensils and non-alcoholic beverages for yourself and guests) at 6:30; talk at 7:30. Our speaker will be Dr. Tyler Mitchell of the Humboldt State University Department of Physics and Astronomy.

- March 7: Public observing at Arts Alive in Eureka. Weather permitting, we will set up scopes at the Gazebo from 6 to 9 pm. Note, in the event of cloudy skies, this event will be self-canceling.
- March 20, 21, 27, or 28: Messier Marathon. This is an attempt to view as many of the 110 deep-sky objects from Charles Messier's list as possible. We will hold the AOH Marathon on whichever of these dates promises to have the best observing conditions. Last-minute decisions will be posted on the AOH website, and emailed to AOH members. A history of Messier Marathoning and tips for a successful marathon can be found at <u>www.messier</u>.

The AOH 2020 Calendar is available for download by AOH members from <u>www.astrohum.org/members\_only/calendar.php</u>. You get historical events, celestial events, and scheduled AOH activities, as well as some cool AOH pictures.



This article is distributed by NASA Night Sky Network. The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit <u>nightsky.jpl.nasa.org</u> to find local clubs, events, and more!



#### The Orion Nebula: Window Into a Stellar Nursery by David Prosper

Winter begins in December for observers in the Northern Hemisphere, bringing cold nights and the return of one of the most famous constellations to our early evening skies: Orion the Hunter!

Orion is a striking pattern of stars and is one of the few constellations whose pattern is repeated almost unchanged in the star stories of cultures around the world. Below the three bright stars of Orion's Belt lies his sword, where you can find the famous Orion Nebula, also known as M42. The nebula is visible to our unaided eyes in even moderately light-polluted skies as a fuzzy "star" in the middle of Orion's Sword. M42 is about 20 light years across, which helps with its visibility since it's roughly 1,344 light years away! Baby stars, including the famous "Trapezium" cluster, are found inside the nebula's whirling gas clouds. These gas clouds also hide "protostars" from view: objects in the process of becoming stars, but that have not yet achieved fusion at their core.

The Orion Nebula is a small window into a vastly larger area of star formation centered around the constellation of Orion itself. NASA's Great Observatories, space telescopes like Hubble, Spitzer, Compton, and Chandra, studied this area in wavelengths we can't see with our earthbound eyes, revealing the entire constellation alight with star birth, not just the comparatively tiny area of the nebula. Why then can we only see the nebula? M42 contains hot young stars whose stellar winds blew away their cocoons of gas after their "birth," the moment when they begin to fuse hydrogen into helium. Those gas clouds, which block visible light, were cleared away just enough to give us a peek inside at these young stars. The rest of the complex remains hidden to human eyes, but not to advanced space-based telescopes.

We put telescopes in orbit to get above the interference of our atmosphere, which absorbs many wavelengths of light. Infrared space telescopes, such as Spitzer and the upcoming James Webb Space Telescope, detect longer wavelengths of light that allow them to see through the dust clouds in Orion, revealing hidden stars and cloud structures. It's similar to the infrared goggles firefighters wear to see through smoke from burning buildings and wildfires.

Learn more about how astronomers combine observations made at different wavelengths with the Night Sky Network activity, 'The Universe in a Different Light," downloadable from <u>bit.ly/different-light-nsn</u>. You can find more stunning science and images from NASA's Great Observatories at <u>nasa.gov</u>.



This image from NASA's Spitzer missions shows Orion in a different light – quite literally! Note the small outline of the Orion Nebula region in the visible light image on the left, versus the massive amount of activity shown in the infrared image of the same region on the right. Image Credit: NASA/JPL-Caltech/IRAS/H. McCallon. From <u>bit.ly/SpitzerOrion</u>

## The Golden Handle

#### by Ken Yanosko

Did you know that the gibbous moon has a Handle? Every month, about 10½ days after the new moon, an interesting phenomenon appears along the terminator. Often referred to as the "Golden Handle," this effect occurs when the *Montes Jura*, or Lunar Jura Mountains, which loom over the *Sinus Iridum*, or Bay of Rainbows, become illuminated by the rising sun while the plain below is still in shadow. The effect lasts for only 10 hours or



so; eventually sunrise reaches the plain below the mountains, and the Handle disappears. Where to look is in the northwest quadrant (as seen from Earth). The large gray circle is *Mare Imbrium*, or Sea of Storms; *Sinus Iridum* is the bay to the northwest, and *Montes Jura* form the north-

ern and western border of this bay. When to look, in 2020, is listed in the accompanying table, with times given in PST/ PDT, adjusted for when the moon is above the horizon for Humboldt County. Some of these times are during daylight; the effect is still visible but harder to see. And two of the 2020 events (omitted from the table) occur while the Moon is below our horizon. Check it out—binoculars are all you need-and let me know what you see. And I'd love to see your photos.

Golden Handle Apparitions for 2020		
date	time of appearance	time of dis- appearance
Sun 5 Jan	13:30 *	20:00
Tue 4 Feb	02:00	03:30 **
Wed 4 Mar	17:00	03:00
Sat 2 May	19:00	04:20
Tue 30 Jun	16:20	00:40
Thu 30 Jul	00:10	02:20 **
Fri 28 Aug	17:20 *	20:40
Sun 27 Sep	22:30	02:50
Mon 26 Oct	16:40 *	22:10
Wed 25 Nov	02:20	02:50 **
Thu 24 Dec	18:30	03:10
	* at moonrise	** at moonset



Left: a Full Moon view of the Golden Handle location. Center: a view with the terminator in the right place and the Handle visible. Right: a close-up view of the Handle. These images were generated by Stellarium: <u>stellarium.org</u>. There's a great "real" photo on Cloudy Nights: <u>www.cloudynights.com/topic/531185-moons-golden-handle/</u>.

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#### Moon Stories from Around the World Storytelling is a human tradition

There are as many stories about the shapes on the face of the Moon as there are cultures who have observed them. They often relate moral tales or creation stories. Do you have a Moon story that was told to you? Why do so many cultures have Moon stories? What do you see in the Moon? [Here are two stories. More are to come.]

#### China: Toad in the Moon

Heng O found out that her husband, Sheng I, had discovered the secret of immortality. When she found his magic potion, she drank it and immediately flew out the window up to the Moon. Sheng I was so angry with what she had done, he turned her into a three-legged toad. Can you see the toad in the face of the full moon?



#### Peru: Fox in the Moon

All that Fox could think about was getting to Moon. After braiding a grass rope long enough to reach Moon, he got help from the birds to fly it up to Moon for him. Once that was done, Fox climbed up the rope. Now the birds say they can see Fox in the Full Moon. Can you?



Heavenly Bodies by Susie Christian

