SIRIUS ASTRONOMER

www.ocastronomers.org

The Newsletter of the Orange County Astronomers

February 2023 Free to members, subscriptions $12 for 12 issues **Volume 50, Number 2**

NGC7380 – a nebula often called the Wizard. Captured by Brett Nordby at the OCA Anza club site in August 2022 using a Celestron EdgeHD 9.25, an ASI6200MM-Pro camera and narrow band filters.

Upcoming Events - free and open to the public

Beginner's class	Friday, 3 March at 7:30 to 9:30 PM **ONLINE** This is session 1 of the class discussing types of celestial objects with and overview of relevant science. Check OCA website to see if this class is also meeting onsite.
Club Meeting	Friday, 17 February at 7:30 to 9:30 PM **In person** at Chapman University and **ONLINE** "What's Up?": John Garrett from Temecula Valley Astronomers Main speaker: Charles Steinhardt whose topic was not determined at press time.
Open Spiral Bar	Saturday, 18 February at 10:00 to 11:30 PM **ONLINE** Want to socialize? Grab your images, experiences, questions, or none and see your fellow Orange County Astronomers face-to-face.
Star Parties	Saturday, 18 February at the OCA Anza site ??? Irvine site dates are yet to be determined

The monthly club meeting is viewable in progress on Zoom and our social media platforms. The recording is available on these platforms after the meeting is over.

https://twitter.com/OCAstronomers
https://www.facebook.com/OrangeCountyAstronomers
https://www.youtube.com/@ocastronomers

Please consult the calendar on the OCA website to RSVP online meetings (required)

President's Message

By Barbara Toy

MAJOR ANNOUNCEMENT – February General Meeting is on the 17th, not the 10th!

Hopefully you've seen notices of this change already – but in case you haven't, the February General Meeting will be a week later than usual, on the 3rd rather than the 2nd Friday in February. This is because Chapman needs the auditorium for an event of its own on our usual Friday, and that takes precedence.

We hope to see you all at the meeting on February 17th, either in person or online!

On the January General Meeting…

We had an interesting time at the January general meeting, specifically the in-person portion of the meeting. As some of you might have noticed, when we returned to the Chapman Auditorium after not meeting there for over two and a half years, we found that they'd made some changes to the audio-visual equipment. We (by which I mean mainly John Hoot, who's been taking lead oar on this project) thought we'd gotten the new interface with their system worked out, and the visual part (which we've had problems within the past) worked just fine in January. Instead, we couldn't connect to the sound system for the auditorium (which hasn't been a problem in the past), despite trying all available approaches, and there wasn't anybody we could contact in Chapman's AV office for help – we tried – as everyone at the campus seemed to be gone for the weekend.

Fortunately, most people at the meeting had cellphones they could use to connect to the remote portion of the meeting for sound, and John positioned his computer to broadcast the sound as far into the room as possible, so I think those who were there were able to hear the presentations, though not as clearly as we would have liked. To avoid this problem in the future, we plan to bring our own sound equipment, so we can get decent sound in the auditorium even if we can't connect to main sound system.

Thanks to everyone who came to Chapman for the January meeting for your patience and willingness to adapt to the conditions we were faced with! And many thanks to John Hoot for his heroic efforts to find a way to make the system work, and for all his help in dealing with the Chapman side of our hybrid meetings!

New Outreach Coordinator

Great news! We have a new Outreach Coordinator, who has a lot of experience both as an astronomer and in doing outreaches. His name is Jeff Gray, and he has a long history of doing outreach on his own, going back to when his daughters were in school, and he decided to fill the gap when he realized they didn't have an astronomy program. Actually, when he contacted us about taking on our Outreach Program, he was in the process of setting up his own viewing event for the Garden Grove School District. It's really great to have someone with his experience and enthusiasm who's willing and able to take on our Outreach program and get it going again after all the challenges of the Covid years.

So, now's a great time to think seriously about volunteering yourself to do some outreaches with the program. Schools and other locations are expressing a lot of interest in hosting viewing events, so I expect the calendar will start filling up. Volunteering not only helps the Outreach Program give students and other community members truly memorable viewing experiences but gives the volunteers memorable experiences as well. Doing outreach events is one of the best antidepressants out there – and it's free, leaves you feeling good and has no negative side-effects.

Jeff's contact information will soon be on the website and in the Contacts on the Sirius Astronomer (in the next issue if not this one). Do reach out and make him welcome!

On More Frivolous Topics…

I was listening recently to a program on animal cognition, including recent studies indicating that a number of different animals have a sense of self (not a surprise to people who live with pets). They even talked about bees that showed problem-solving skills and an ability to count, exploring cognition at the insect level. That program and a question to our January speaker about SETI (i.e. the Search for Extraterrestrial Intelligence) have been causing me to wonder about the chances of actually being able to communicate on more than a basic level with extraterrestrials if we ever did make contact.

We have a lot in common with other creatures on our own world – shared environment, shared evolution, and, particularly with fellow primates, similar anatomical and brain structures. We often hear about high levels of intelligence in other species, such as octopods and dolphins, and many of us live with dogs or cats. Despite all we have in common with them, we've never had more than a limited ability to communicate with any other species on our own planet, no matter how intelligent its representatives might be. Even with pets, the most meaningful common communications seem to be about food, and those only at a pretty basic level. We usually do better with members of our own species but still have a lot of misunderstandings. None of that bodes well for communicating with creatures that are totally alien, no matter how advanced they might be…

We're not likely to run into extraterrestrials doing our type of astronomy, but we often deal with people in the broader community who are not astronomers. Many of them, when they find that we are astronomers, want to know if we've seen any UFOs. If you haven't fielded that type of question already, it's pretty much guaranteed that at some point you will. There seem to be a lot of people out there who want to talk about UFOs, which they assume could only be spaceships piloted by extraterrestrial visitors, and challenges to those beliefs often result in demands that you explain sightings that they've heard about that were supposedly from some unimpeachable source. It can be difficult to escape from such inquisitions gracefully.

This type of encounter shows the problems of communicating with people who have a totally different mindset and whose concept of reliable evidence is very different than what we're used to. I suppose these could be considered opportunities to engage with an alien perspective and to practice techniques for communication that might work if you needed to communicate with an even more alien mind, like with another species (one can dream, after all). One thing to consider is that you really don't have to convince them of anything. It's often more effective (and less frustrating) to divert the discussion into other interesting areas that don't directly challenge them but might get them thinking along more scientific lines. For instance, there are a lot of interesting atmospheric effects a lot of people haven't paid attention to, such as sun dogs, sun pillars or moon halos. Or you could get into distances to different stars out there, or maybe get into the sad lack of findings of anything that would signal an advanced civilization from the long-running SETI projects (the SETI Institute is still very much a going concern and there have been other SETI projects as well), which could mean that there isn't anyone currently out there in our part of the galaxy who might have the technology to reach us.

Frivolity aside, education is our mission, and it's best to have fun with it. I hope all of you have fun with any educational endeavors you may try, and that you get some clear nights that are not too bitterly cold for some good viewing!

Response to COVID-19 Crisis

Any use of the club's Anza site by members is at their own risk. Visitors should bring supplies to clean and sanitize surfaces they contact. When you leave, take any trash that you generate or find on site out with you. Please maintain social distancing if anyone else is out there.

Meeting in person:	Astrophysics SIG, Anza star parties, and **monthly club meeting**
Meeting via Zoom:	**Monthly club meeting**, Beginner's Astronomy class
Coming soon:	Orange County Star Parties
Cancelled until further notice:	AstroImaging SIG
Check with Coordinator:	Outreach events

Carpooling OC to Anza	contact	Gene Kent	kenthouse@cox.net	714-604-8396

I'm Gene Kent, a long time OCA member. I live in Tustin, CA. I'm looking to find someone to share the drive to and from Anza. I have a Chevy Trail Blazer. It will hold all the astronomy stuff for 2 people. I usually set up on the ball field below Anza House. If you have a pad or an observatory, I can drop you and your gear off there.

From the Editor

Sirius wants photograph submissions from club members

Sirius is doing okay for pictures but still wants more! Please send pictures to me along with a brief description of the subject, where the image was taken, and the equipment used.

Ideas for Future articles

The newsletter includes articles from members or about subjects suggested by our members. We seek ideas and writers to cover them. To contribute an article or work with the editor to produce one, please contact me at newsletter@ocastronomers.org .

Due dates for submission of articles, pictures and advertisements

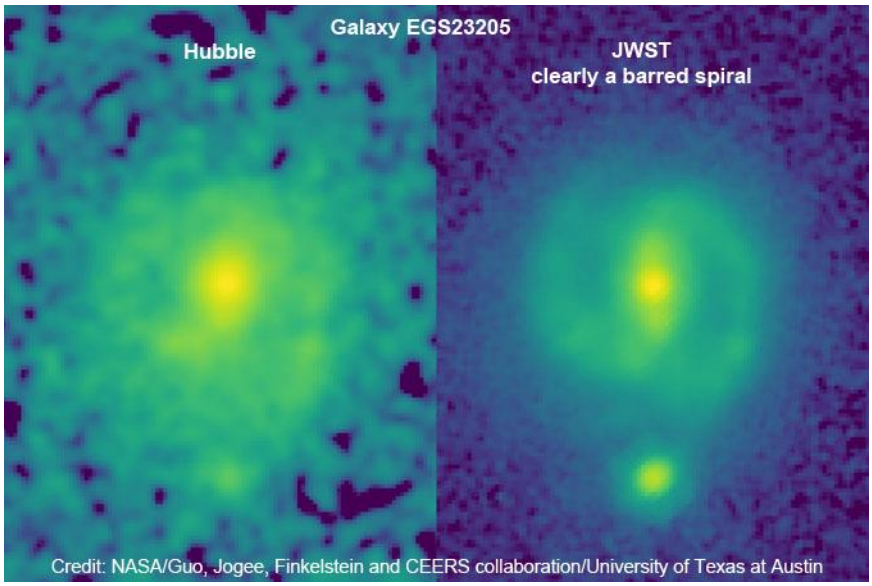
Issue	Due date
March	18 February
April	25 March
May	22 April
June	20 May

AstroSpace Update

February 2023

Astronomy and space news summarized by Don Lynn from NASA and other sources

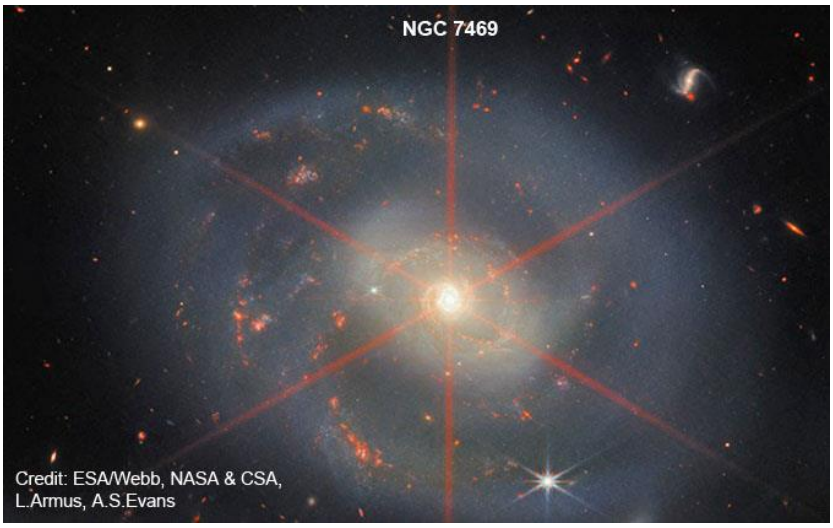
Early Barred Galaxies – Images taken by the James Webb Space Telescope (JWST) are revealing the structures of very distant galaxies. Because the light took billions of years to reach us, we are seeing these galaxies as they were billions of years ago. Spiral galaxies with central bars have been seen for the first time in very distant galaxies. Now scientists have to develop a theory of galaxy evolution that allow bars to form so early in the history of the Universe. Bars push material into galaxy centers, increasing star formation and central black hole growth.



Debris Disk – New JWST observations of the young variable red dwarf star AU Microscopii show the debris disk surrounding the star in the greatest detail ever. The star was already known to have 2 exoplanets. The goal of taking these observations was to see if there are giant planets orbiting far enough away from the star and large enough that they might be imaged without the star's glare hiding them. None were found in these observations. However, the data give information about the properties of the disk. For example, the disk appearing brighter in a shorter infrared wavelength indicates that there is much fine dust in the disk. AU is only 32 light-years away.

HH24 – Astronomers used 6 different telescopes operating at various wavelengths of light, including radio, to observe the object Herbig-Haro 24 (HH24). It consists of 7 stars being born, jets, dust, and gas. One of the forming stars, or protostars, has been gravitationally slung out of the group at about 15 miles per second. The distance from the others shows that it was thrown out about 5800 years ago. Magnetic and electric fields have formed in HH24, which have pushed gas into jets. Five of these jets were found in the new observations, extending 5 light-years from the core.

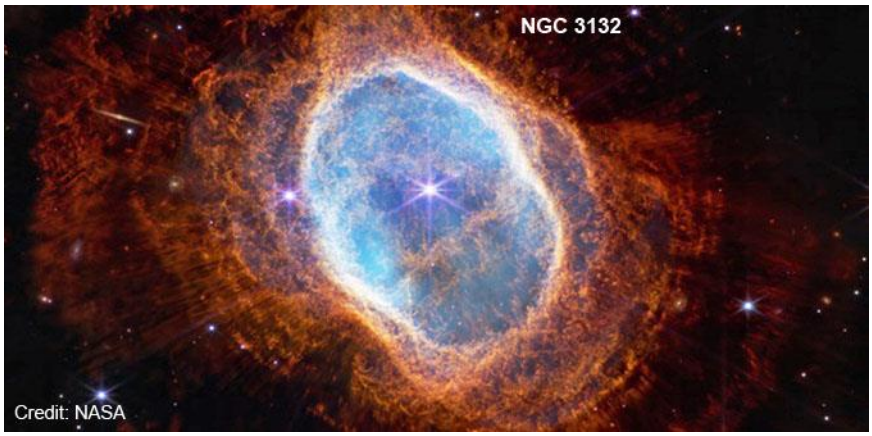
Merging Galaxies – JWST has observed 4 merging luminous infrared galaxies (LIRGs). The infrared wavelengths that JWST observes penetrate the dust of these galaxies, allowing more detail to be seen. In one of these galaxies, NGC 7469, the new images show 66 star-forming regions, about half of them not seen before. These regions are grouped in a ring near the core of the galaxy. Also seen were outflows of ionized gas moving at about 4 million mph.



Exoplanet Confirmed – JWST has confirmed an exoplanet, known as LHS 475 b, first detected by the TESS planet-finding space telescope. This is the first exoplanet confirmation by JWST. The new observation showed the planet is a rocky one, almost exactly the diameter of Earth. An attempt was made to take a spectrum of the planet's atmosphere, but it did not identify any gases. It is not clear if there is no atmosphere, or it has only gases difficult to detect. The planet is hundreds of degrees warmer than Earth because it orbits quite closely to its star, taking only 2 Earth days to circle. The star and planet are only 41 light-years away in the constellation Octans.

Earth-Sized Exoplanet – Scientists using TESS have found a likely rocky exoplanet, designated TOI 700 e, which is 95% the diameter of Earth. It orbits within the habitable zone, that region where temperatures could allow liquid water to exist on its surface. Because it was named "e", we know that 3 planets (TOI 700 b, c, and d) have previously been found there. Their star is a small red dwarf about 100 light-years away in the constellation Dorado. Planet b is about 90% Earth's diameter, and c is over 2.5 times Earth's diameter. The newly discovered e orbits between c and d. Planet d is also in the habitable zone.

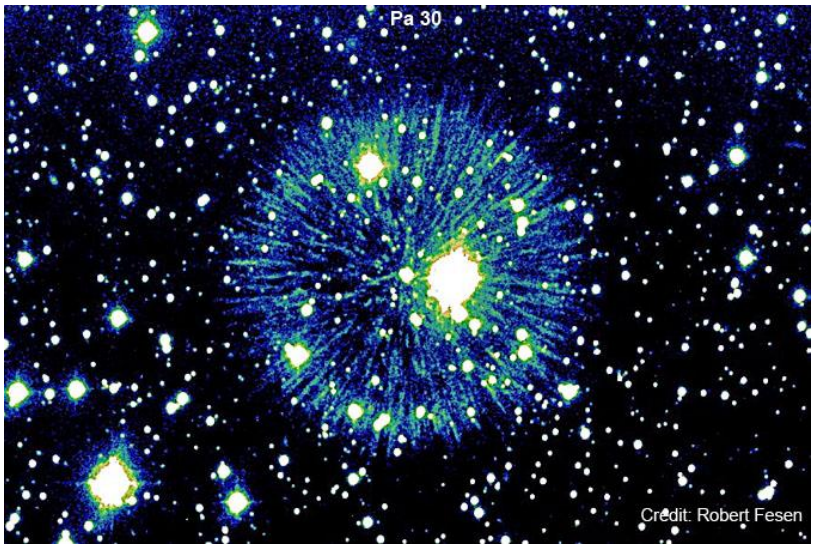
Southern Ring Studied – Analysis of images taken by JWST of the Southern Ring Nebula (NGC 3132) showed a binary pair of white dwarf stars in the nebula, which are heating surrounding dust so that it glows brightly in infrared. More detail was shown in the nebula than any previous images because JWST has a much larger aperture than the Hubble Space Telescope and can image in much longer wavelengths of infrared. Broken concentric arches were seen in the outer parts of the nebula, caused by actions of a pair of stars within. Evidence, such as jets and nebular protuberances, was found indicating a total of 5 stars within the nebula.



Galaxy Halo – Scientists studied a fast radio burst to determine how much it was dispersed by matter in the halo of the Milky Way as that burst traveled to Earth. The result indicates significantly less matter (ordinary matter, as dark matter doesn't disperse light) in the halo than had been previously thought. This probably implies that galaxy halo matter is lost over time, pushed away by stellar winds, supernovas, or other forces. The observation was done by the Deep Synoptic Array of radiotelescopes at Owens Valley.

Hypermassive Neutron Stars – When two neutron stars collide, they can form a theoretical object known as a hypermassive neutron star (HMNS), which is briefly held from collapsing by centrifugal force of its spin, but quickly becomes a black hole. Unfortunately, current gravitational wave detectors are not sensitive to the frequencies emitted during the hypermassive phase, so HMNSs have not been confirmed. New theory says that HMNSs should also emit bursts of gamma rays. A new study searched 700 gamma ray bursts for the theoretical properties of an HMNS and found a few that appear to have the right oscillations to be HMNSs. Computer simulations show that an HMNS would have to be spinning at least 1300 times per second to match the observations.

Strange Supernova Remnant – A supernova explosion was observed by people in the Far East about 850 years ago. Astronomers found a supernova remnant that appears to have the right age and is located in the right part of the sky. But it is an unusual remnant in that it resembles a fireworks explosion. Also, it emits little in the radio or X-ray wavelengths, and no neutron star or black hole has been found at its center, though there is an exceptionally hot white dwarf star there. The remnant was named Pa 30 when it was found by an amateur astronomer in 2013 in archived images from the WISE infrared space telescope. A new study says that a supernova caused by 2 white dwarf stars colliding best explains the observations. It would be a Type Iax supernova, which does leave a central white dwarf rather than a neutron star or black hole. The central star has an extraordinarily strong stellar wind, which explains the radial streaks in the remnant.



Decaying Orbit – Astronomers have found an exoplanet, designated Kepler 1658b, whose orbit is slowly decaying. Measurements show that its orbital period is decreasing by 0.131 seconds per Earth year, indicating that it is slowly moving closer to its star. The cause is tidal forces between the planet and its star. The star has aged to the point where it is starting to expand into its subgiant phase. This is the first discovery of a planet's decaying orbit about a subgiant star, though a few decaying orbits have been seen with younger stars. The planet is already orbiting close to its star, 8 times closer than Mercury is to our Sun, and 1658b is just going to get closer and hotter, eventually colliding with the star.

Smallest Binary Star System – Astronomers have found the smallest (in size and mass) binary star system known, a pair of cool stars that orbit each other every 20.5 hours. The star system is known as LP 413-53AB. It was found in archived spectral data. The primary star is a red dwarf and the other component is probably a brown dwarf. There are only 3 other known cool binary star systems, and the new discovery pair is closer together and billions of years older than the other 3.

Star Dims – Astronomers discovered that a red giant star dimmed by a factor of 60 for 7 years, then returned to normal brightness. This happened starting in 2012 but was much later discovered in archived data. The star, known as Gaia 17bpp, is 26,000 light-years away. Older archived data shows no previous dimmings as far back as 1950. Astronomers believe the only explanation is that the star has a faint companion star that is accompanied by a huge dust disk that orbited in front of the primary star. The companion star would likely take centuries for each orbit. There are a few other stars that have undergone dimmings believed to be caused by a companion with a dust cloud, such as Epsilon Aurigae.

Intracluster Light – The Hubble Space Telescope (HST) has measured the dim light from stars wandering between galaxies within cluster of galaxies, which is termed "intracluster light". The study involved 10 clusters of galaxies of varying distances, so we are seeing the clusters as they were when the light left them, at 10 different ages of the Universe. The level of intracluster light varied little over this time span, indicating the stars were scattered outside of their originating galaxies early in the history of the Universe, and then not substantially changed in the billions of years since.

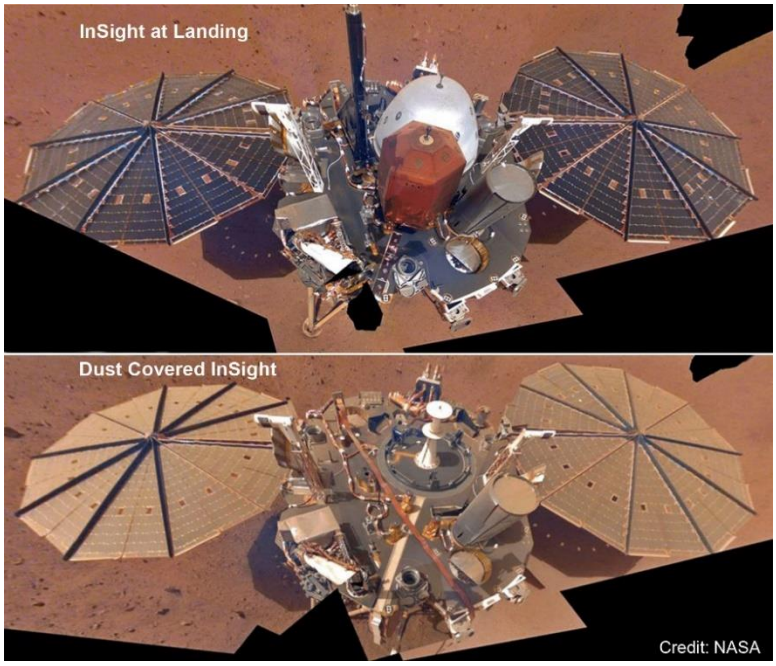
Solar Sail – Gama is a company in France that has launched its first solar sail, known as Gama Alpha. It was launched to 342 miles altitude by a SpaceX Falcon 9 rocket. The satellite is the size of a large shoebox, and deploys a sail of 789 square feet area. It spreads this sail using centrifugal force while spinning. The craft will propel itself solely by the pressure of sunlight on the sail. At the end of the flight, it will maneuver down into the atmosphere and burn up. It is planned to follow up with a Gama Beta flight that will further test navigating a solar sail.

Io Volcanism – IoIO is a telescope in Arizona, built from off-the-shelf parts from camera and telescope stores, that was designed to monitor gas around Jupiter's moon Io. It uses a coronagraph to block out the glare from Jupiter. Since observation began in 2017, the largest outburst of gas from Io's volcanoes occurred this past fall. Sodium and ionized sulfur were seen to brighten. IoIO has also observed comets, exoplanet transits and the sodium cloud about Mercury. The Io team would like to see more IoIO telescopes built to avoid observation gaps from daytime and cloudy weather in Arizona.

Juno Glitch – Juno (Jupiter orbiter) in December had its transmission to Earth of recently taken images interrupted by a failure caused by intense radiation. Spacecraft controllers restarted the onboard computer and were able to resend the images. Those images included ones taken during the first close pass of Juno by the moon Io. 8 more Io passes are planned over the next few years. Juno's mission is currently planned through September 2025 but could be further extended.

NEO Surveyor – Construction has begun on NEO Surveyor, a spacecraft to search for near-Earth objects, particularly hazardous ones. It will search in infrared because asteroids appear bright in infrared even if they are dark colored in visible light. It will do its work from the Sun-Earth L1 Lagrange point, about a million miles sunward from Earth. This will allow it to easily spot objects approaching Earth's orbit from the inside without requiring the spacecraft to look toward the glaring Sun. The spacecraft's infrared detectors will be cooled by radiators dissipating heat into space. Cooling reduces noise in images, allowing dimmer objects to be discerned. The primary mirror, just 20 inches across, will be constructed of a solid block of aluminum. Launch is planned for 2028, to be followed by a 5-year primary mission.

InSight Mission Ends – The Mars InSight lander has failed. Despite efforts by spacecraft controllers to dispel the dust that has settled on InSight's solar panels over its more than 4 years on the Red Planet, the electrical power produced dropped below what will sustain even minimal operation. InSight collected the only good seismic data on Mars, allowing scientists to work out the nature of the planet interior and the frequency of marsquakes and impact quakes. More than 1300 quakes were recorded. The craft also measured the wobble in the planet's rotation. Unfortunately, the other major instrument, a heat measuring probe that was to bury itself about 16 feet into the ground, failed to dig far enough due to unexpectedly clumpy soil.



South Korean Lunar Mission – Danuri is the first ever lunar orbiter from South Korea. It was launched last August on a SpaceX rocket and attained its science orbit in December. It just sent back its first images of the Earth and Moon. That country plans to land a spacecraft on the Moon in 2032, and Danuri images will be used to select a site for that landing. Besides imaging, Danuri also measures magnetic fields and gamma rays.

Another Look

Dave Phelps, 2023 February

New Moon-February 20, Full Moon-February 5

February 5 will mark the Lunar New Year for many cultures, celebrated in their own particular way. Since it signifies renewal, the February new moon is called by some the "House of the Burning Moon" and the "Budding Moon. South-Western Native Americans called it the "Moon of Purification and Renewal". Other Native Americans call it the Snow Moon or Bone Moon and it's the Celtic Moon of Ice. Our modern name is Snow Moon.

Transiting the meridian and near the zenith in the evening hours in February and March when the weather is changing from frigid to merely cold, it is no wonder that herdsmen from the fertile crescent to Scandinavia north identified Castor and Pollux as harbingers of spring, when herds grew, and grain sprouted.

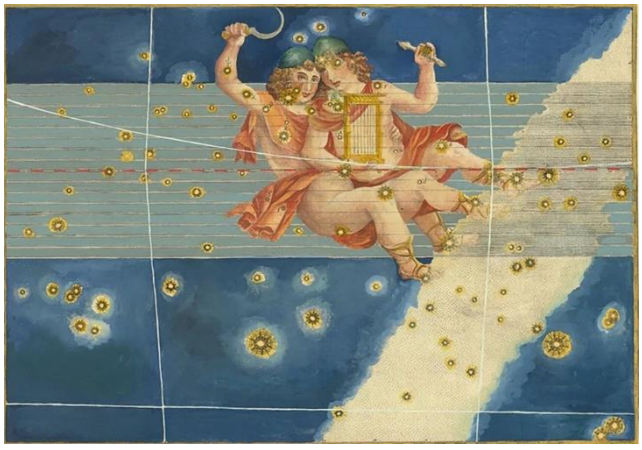
> *Instead of twin brothers, however, the ancients imagined these stars represented two Kids. There was a significance in this title quite apart from its relation to the herds that they were daily concerned with. We see in this region of the sky three ancient and important constellations named after domestic animals that figured prominently in the pastoral life of early times, the Ram, the Bull, and the Kids. Plutarch tells us that "in the reproduction of species among the herds familiar to primitive man, the first produced in the vernal season are the lambs, then come the calves, and later the kids, so that it was natural that the ancients who devised the constellations should characterise(sic) in this order the three constellations through which the sun passed in the vernal season.* *"Star Lore of All Ages" Olcott*

The two stars are almost universally identified as twins throughout our western culture though seen differently from Egypt to Polynesia and Australia.

To the Australian aborigine they were two young men chasing the young women of the Pleiades. the Arabs saw two peacocks, the Egyptians two sprouting plants, and the Hindus twin deities, while in the Buddhist zodiac they represented a woman holding a golden cord and the Polynesian Islanders a pair of twins. It is also interesting to learn that the Bushmen of South Africa identified the two stars as young women, the wives of the Eland, their great antelope and the Gemini were the Ape of the early Chinese solar zodiac. Later on, in China, the constellation was known as the Yin/Yang, two principals familiar to us today.

What this tells us is that for thousands of years cultures have identified the stars of Gemini with the position and path of the sun, moon, planets and their location against the stars signifying special times of the year. We are told that on the Babylonian monuments and boundary stones, the oldest we have, there is a set of symbols repeated over and over again, and always given a position of prominence. It is the so-called "Triad of Stars," a crescent lying on its back and two stars near it.

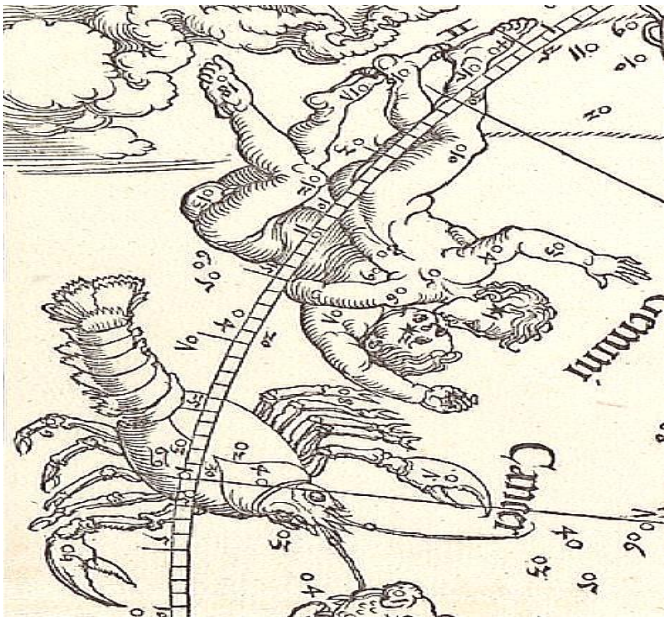
The Triad of Stars
From a Babylonian Boundary Stone
Approximate date 1200 B.C.



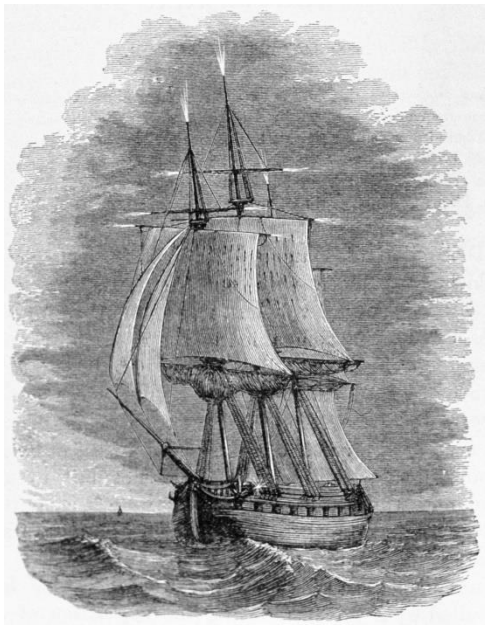
The significance is that four thousand years BC, Castor and Pollux served as indicators of the first new moon of the year, just as the star Capella did two thousand years later. This Traid of the moon and two stars is a picture of what men saw in the sunset sky, at the beginning of the first month 6000 years ago. It is the earliest record of an astronomical event that has made its way to us.

The name Gemini as we know it has only been such since classical times. It comes from the Latin geminī, plural of geminus, meaning "twin. The Greeks and the Romans know them as Castor and Pollux, twin brothers of different fathers, hatched from an egg, one immortal and one not. Still, I don't think the name Gemini actually was used till the 13th century when the first charts were drawn and globes constructed.

I have never been all that interested in Castor and Pollux. I see them as a pair of bullies always looking for a fight. The Romans saw them leading their armies in battle and the Greeks saw them as crew on the Argos in its search for the golden fleece.



Albrecht Dürer | The Celestial Map- Northern Hemisphere 1515
https://www.metmuseum.org/art/collection/search/358366



Last night saw Saint Elmo's stars,
With their glittering lanterns all at play
On the tops of the masts and the tips of the spars,
And knew we should have foul weather to-day.

From Longfellow's "Golden Legend of the Padrone"

Safe comes the ship to Haven
Through billows and through gales,
If once the great Twin Brethren
Set shining on the sails.
- Macaulay.
Public Domain

The twins are also the first reference we have to the atmospheric phenomenon known today as St. Elmo's fire; an electrical glow off the tips of masts and spars on our old wooden sailing ships. During the three years I spent at sea I never saw it personally, but a report taken from one of the survivors of Magellan's circumnavigation describes the fire of the twins during its passage through the strait.

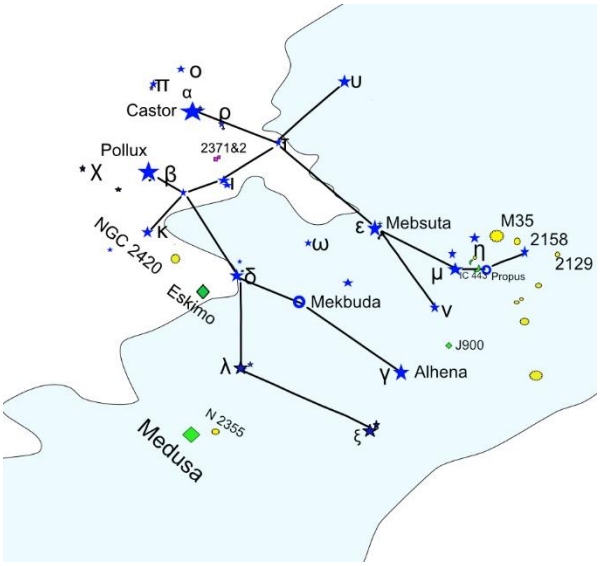
No less a luminary as Herschel named Castor, α Geminorum, as the "finest example of a double star in the northern hemisphere". Smyth in the "Bedford Catalog" gives it three pages, Webb a long description and Houston rhapsodized over its companion's noticeable change in position angle. We still use Castor as a primary star, using a Sextant, in Celestial navigation.

Physically, Castor is a sextuplet, three visible stars and each with its own spectroscopic binary. The three visible components are essentially 2, 3 and 10th magnitudes and can be split in a three inch refractor, though I am pretty sure I never looked for C. While up there check out 5th magnitude pi π, it has an 11th magnitude companion.

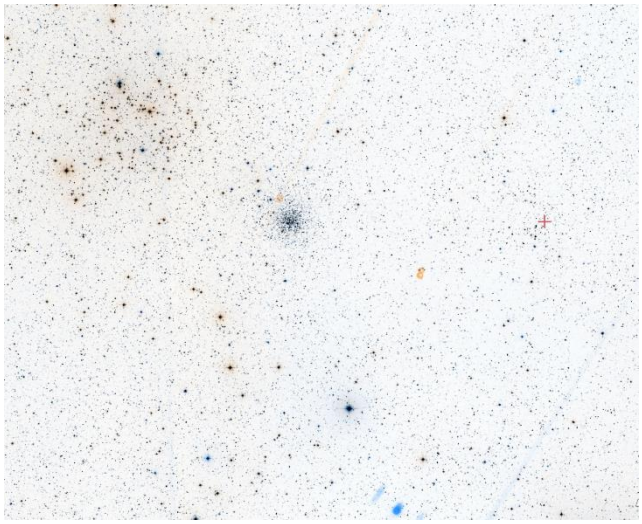
While we are speaking about superlatives, at the foot of Castor is M35, one of our finest examples of an open cluster. NGC 2158 is next to M35 and NGC 2159, marked by a cross. IC 2157 is next to N2129 and difficult.

Dripping down from the foot of Castor like icicles on a fir tree is a line of star clusters and objects curving into and out of Gemini. All are visible in your telescope. The one that struck me was a difficult planetary Scotty mentioned in his column. Jonckheere 900 also known as PK 194+2.1 and J900, is a planetary nebula that will be a tough find at 12th mag. In the area, just over the border into Orion is NGC 2174-5, the Monkey Head. I mention it because local astrophotographer Rick Gonzalez took this amazing image.

NGC 2174 from Rick "Speedy" Gonzalez



Castor

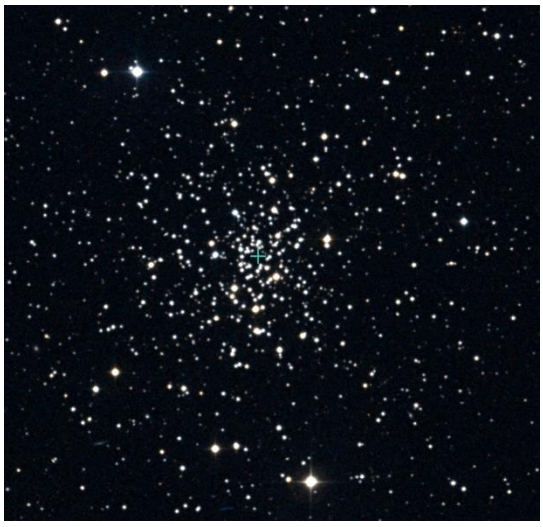


M35

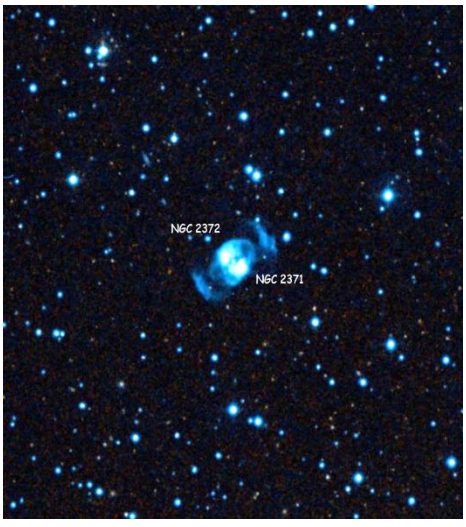
If by now, you are asking "why so many open clusters?", remind yourself that we are still in the Milky Way and clusters and nebula permeate, we are not done yet, we have a few more doozies.

NGC 2420 is up by the Eskimo so you can use it as a starting off point for star hopping. N2420 will come up on you quickly as a dense misty patch but will resolve nicely to your telescopes limit. It's 8th magnitude and interestingly right on the ecliptic. Another interesting open cluster is over by the Medusa, NGC 2355. It's nice, a few bright stars, a few red ones and easy to pick out from the background. N2355 is 10th magnitude and 10 arcmin across.

https://en.wikipedia.org/wiki/NGC_2355#/media/File:NGC2355_-_SDSS_DR14_(panorama).jpg



https://simbad.u-strasbg.fr/simbad/sim-id?Ident=NGC+2420



NGC Catalog #2371

Up on the other side of Gemini, making the top of the spindle with ι, ρ and τ is the Gemini double planetary. It's small and only 11th magnitude but visible in your 8". I did some comparisons. Tycho is 45 arcmins. Picture him in your telescope. The Gemini double, NGC 2371 and 2372, are .73 arcmins. Use an OIII filter if you have one. Modern images show a lobed shape, though different telescopes can show different images, the double NGC designation comes from the reports Draper got after it was found. The Herschel's reported two nebula with a dark lane between them, hence the two number designation. There are magnitude differences based on the authority, but the NGC catalog lists 11.2, so I'm sticking to it until I find two sources that agree on the same number.

There are three amazing deep sky wonders in Gemini that are almost certainly on every amateur's to-do list. The first is the Eskimo Nebula, NGC 2392, Caldwell 39, and also know familiarly as the Clown Face. Some years back my club had a Monday evening at Griffith Observatory's beautiful 12" Zeiss refractor. The image of the nebula was nothing short of amazing. So is its size. By comparison, NGC 2392 is just a smidge smaller than Copernicus in your eyepiece.

The Medusa Nebula is a little off by itself closer to Canis Minor and not too far from NGC 2395, an open star cluster of 8th magnitude. The Medusa, also Abell 21, is a lot fainter, about 16th magnitude, though, from the attached image I grabbed from Simbab, they are of about the same angular dimensions, 14x14 arcmin, though maybe the Medusa is a little closer to 10 arcmin, about a third the size of the full moon.

Back in the late 80's while writing for a local astronomy club, I offered a challenge to find a supernova remnant near the foot of Castor. Fast forward 40 years and IC 444 and IC 443 are easy pickings for our stellar astrophotographers. It will still be a challenge visually, however. I could see the bright rim in the 17" and even trace some of the nebulosity that extends from I443 to I444. It's down there by Propus, η Geminorum and is in a very rich field of objects, next to Collinder 89, M35 and NGC 2128 as well as η and μ. H'ς proper name is Tejat Prior and also Propus. Propus is a triple star system but probably more famously the planet nearest Uranus when it was discovered by Herschel. M'ς proper name is Tejat Posterior, meaning the Heel.

You can put Mu and Eta in the same field and see the extent of IC's 443 and 444, but I don't know how much you can capture with your eye. Its bright enough at 11th magnitude but so spread out it's hard to see. I used a Hα back then, you will do better. You can find images all over the internet of the nebula, the OCA website has a dozen, but I chose this one by John Castillo because it is just extraordinary.

https://simbad.cds.unistra.fr/simbad/simidIdent=ngc+2395&NbIdent=1&Radius=2&Radius.unit=arcmin&submit=submit+id

IC443 taken by John Castillo

Dark Skys Dave Phelps

Help Wanted (Volunteering Opportunities)

- OC Astronomers Club representative to WAA (Western Amateur Astronomers)

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For Sale contact Ron Choi rongrace2@cox.net

- Orion StarShoot AutoGuider further reduced price $ 200

For Sale contact Rick Hull hull3hull3@yahoo.com 949-636-2920 cell

- QSI 6120C OSC CCD camera with Mechanical Shutter even further reduced price $ 1625 +sh

This unit was built before the ATIK acquisition, so you know it was built to QSI quality standards.
Camera body is the "-s" version with mechanical shutter. The front end can be replaced to have an integrated OAG and/or filter wheel. Unlike more economical cameras using only desiccant, QSI 6xx series have a sealed chamber, purged and filled with a noble gas.

Built around the Sony ICX834 with EXview HAD CCD II technology, this 12M sensor is perhaps the best CCD by Sony before ending CCD production - high in sensitivity, low in noise. Pixels are 3.1um for high resolution and image array is 8.8x13.2mm in size. The 3.1um pixels are nearly ideal for those using focal lengths of 600 - 1200mm desiring to achieve maximum resolution, as seeing permits. I believe the Bayer mask is superior to most found on CMOS sensors which are designed for consumer cameras, providing less overlap of the color channel band-passes.
I can provide a few images taken at 770mm focal length out at Anza. Contact me by email.

New, this camera is now $4200, and the ATIK 4120C which is a basic lower-end cousin, is $3K. On CN I am asking $1750, any OCA member may purchase it for $1700 plus shipping. Please feel free to contact me with any questions.

For Sale contact Michael Newman mnewman2112@gmail.com

- Pad lease for LP-12 in Lower Pads section and the pier upon it New reduced price $ 1000

It includes a pier that is very nicely aligned and can support a C-8 up to a C-14 I believe although the new owner may need to drill new holes. For questions and to express your interest in the pad, please contact me via email.

For Sale contact Bill Prats b.bill.p@gmail.com

- QHYCCD PoleMaster Camera Adapter for Losmandy GM811xx Mount, IEQ30/IEQ45 # 020038 $ 30
  3 Pieces, Bright red finish, no scratches
- Spotter Scope: Orion 6X30mm Correct Image Right Angle $ 30 obo
- ZWO OAG, Off Access Guider, new never used, full kit $ 100
- 12VDC to 17VDC 3 amp Voltage booster with digital voltmeter used on a Losmandy G811GM $ 50
- Losmandy Servo motor/Gemini 2 cables (pair) recent & hardly used Make offer
- Losmandy Gemini 2 Hand Controller, recent & hardly used Make offer

Contact Bill Prats b.bill.p@gmail.com Shipping is extra. All items can be picked up in Huntington Beach.

For Sale contact Sam Pitts sam@samsastro.com 951-676-1345

- Sky-Watcher Star Adventurer 2i Pro Pack S20512 $ 375
  With 2 Vello Canon Camera connectors for Rebel series and D series cameras. These items have never been used (Like new in Box). I have not taken them out of the box.
  Retail prices $ 520 - $ 450

- 2 Losmandy DC-14 Dovetail Plate kits for Celestron C14 $ 100 each
  Like new, used to mount C14 one time, bolts to existing holes. Wt. 3.75 lbs. Length 24" HS 23.00, height. top of tube to top of dovetail plate 1.20" Thickness 0.7" Retail $ 140.00 ea.

- CG4 Older version, good condition, mount,tripod, polar scope, ADM saddle accepts $ 150
  D and vixen plates, RA drive, storage tote, weights. works great.

I can meet at Anza to deliver purchased items.

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