SIRIUS ASTRONOMER

www.ocastronomers.org

The Newsletter of the Orange County Astronomers

May 2024 Free to members, subscriptions $12 for 12 issues **Volume 51, Number 5**

Close-up view of a structure called "The Elephant's Trunk" which is found within the larger nebula IC1396. This was taken by Ryan Bohner in August 2019 using a 70mm refractor and ASI1600 Mono camera.

Upcoming Events - free and open to the public

Beginner's class	Friday, 7 June at 7:30 to 9:30 PM **ONLINE** This is session 4 of the class: Covers perception and the physical explanation for how we see images.
Club Meeting	Friday, 10 May at 7:30 to 9:30 PM **IN PERSON** at Chapman University and **ONLINE** "What's Up?": Chris Butler Main speaker: Dr. Shaunna M. Morrison from Carnegie Science presenting "Data Driven Discovery In Evolving Planetary Systems - A Mineral Informatics Approach"
Open Spiral Bar	Saturday, 11 May 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, 5 May 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

Well, the 2024 total solar eclipse is now behind us. From posts on the AstroImagers email group (AstroImagers@groups.io) and other communications, eclipse chasers had a wide variety of experiences with this one. Some of us were clouded out entirely, others had clouds that cleared enough that they could see totality, and some (though generally not in Texas) had skies clear enough to see the entire eclipse from first to fourth contact. In spite of the challenges, some of our imagers were able to get some stunning images – if you're not on the AstroImagers email group, it's worth signing up for it to check them out (and I hope some will be included in this issue of the Sirius Astronomer).

Where Alan and I were in Uvalde, Texas, was totally clouded out except for a few glimpses of the crescent sun just before totality and some views of the sun near the end of the event, when it was a wider crescent. Totality for us was covered by a particularly thick cloud, which was frustrating, but did give us the chance to focus on aspects of the eclipse we might otherwise have overlooked, like the sudden deep darkness, sunset fringes where they could be seen through the clouds, and the quiet as all the birdsong and other background noise around us were suddenly stilled during the period of darkness. It wasn't the experience I had been hoping for but was far from a total loss.

On the heart-warming side, a local teacher we met at a bakery on the morning of the eclipse said that their school had arranged to have all of the students go outside for the eclipse, with eclipse glasses, and they were all really excited about it. I hope they were able to see more than we could. Back in California, Alan's employer gave the employees eclipse glasses and encouraged them to view the partial eclipse from their parking lot (one of his co-workers sent cell-phone pictures). I hope a lot of other schools and employers gave people a chance to go outside to see it as well.

On More Mundane Topics...
We're still working to get activities that were regular features of pre-Covid club life back up and running. One of these is the in-person side of our general meetings at Chapman University. I think people forget that we have this option again – benefits include access to the club library, visiting with fellow members in person (including Charlie for membership and other issues), and refreshments (thanks to Helen Mahoney and Doug Millar). Do consider coming to Chapman for upcoming meetings – it's worth the effort to have the interactions we can't duplicate on Zoom.

Another remaining gap in our activities is the Orange County star party. We're hoping to get these going again for this summer season, and will post details on the website, the Sirius Astronomer and the email groups when they're finalized.

Meanwhile, may you all have clear skies for viewing, wherever you are!

Outreach

OCA needs a new outreach coordinator and other outreach volunteers.

Our traditional OCA Outreach program focused on events where volunteer club members brought telescopes to certain locations, generally schools or parks, for students, their families, or members of the general public (depending on the location) to view through. The Outreach Coordinator was the contact for the schools or other entities that wanted to set up viewing events, managed the calendar, had a list of volunteers for these types of events, and would send out notices of upcoming Outreach events to the group of volunteers and determine who could cover the events that had been scheduled.

At the events, the Coordinator or someone designated by the Coordinator would handle the logistics for the club's part of the event – such things as making sure we had access to the viewing area, that we were setting up in the correct area, that area lights were out after the viewing started, etc. Jim Benet, who set up the program and streamlined how it was administered over the many years he ran it, has generously donated his software and other tools for handling all of these functions smoothly and easily. Although Jim handled all of the administration of the program himself, there is no reason that can't be handled by a team instead of a single person.

That's the kind of program we want to build again, an Outreach program that our club volunteers enjoy participating in as much as those who are doing the viewing. Are you interested in helping to get this kind of program going again? If so, we'd love to hear from you, whether you are interested in being the Coordinator for the program, in helping to administer the program in some other capacity, or in being a volunteer for Outreach events – please email OCA Secretary Alan Smallbone at Alan@ocastronomers.org.

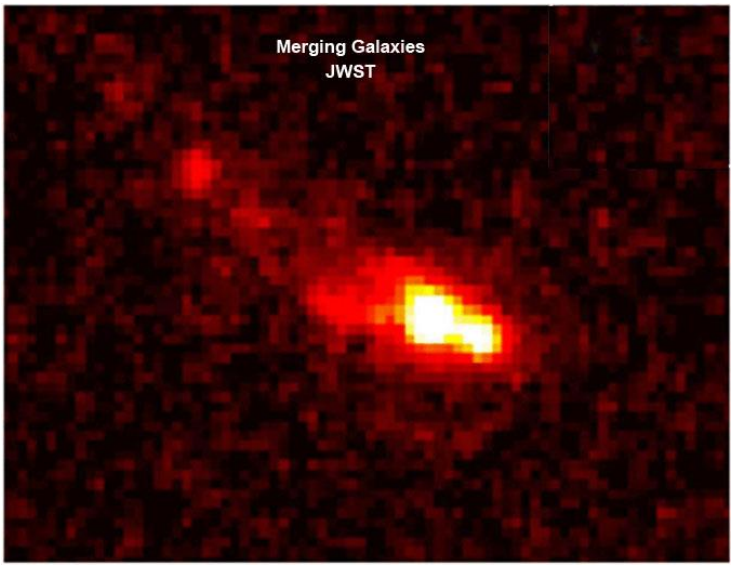
Social Media Coordinator

If you enjoy social media and would like to help keep our accounts active, we are seeking a social media coordinator and would love to hear from you. We have a lot to tell people about OCA events and upcoming meetings as well as general astronomical information. We currently have Instagram, Facebook and X/Twitter accounts. There is a lot of flexibility in what can be done with this volunteer role. If you are interested, please contact our webmaster (also our Vice President), Reza AmirArjomand at Reza@ocastronomers.org.

AstroSpace Update

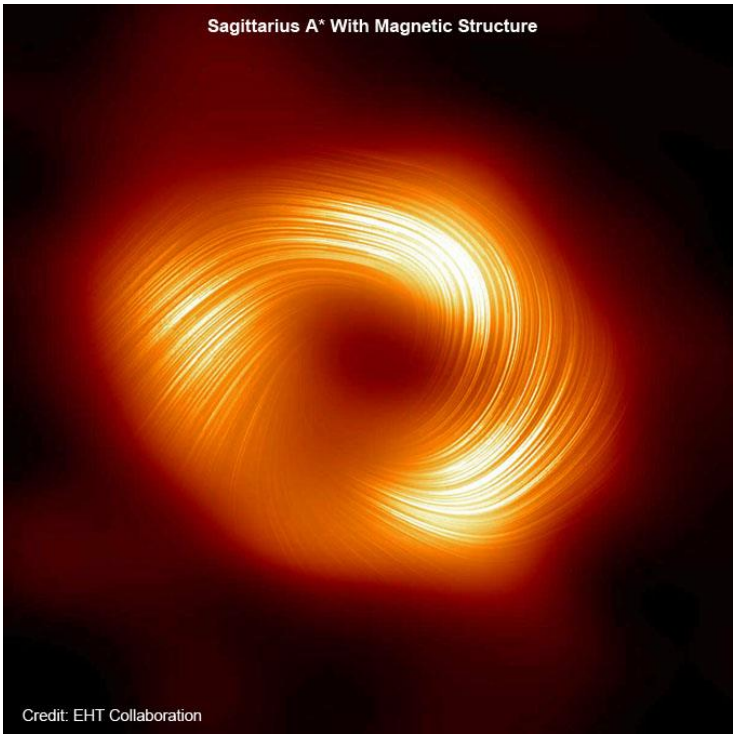
May 2024

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



Merging Galaxies – The James Webb Space Telescope (JWST) was used to make the most detailed observations of the most distant known merger of two galaxies. They appear as they were when the light we are seeing left there only 510 million years after the Big Bang. The number of stars that had formed in those galaxies is surprisingly large for this early in the history of the Universe. The galaxies are more massive than expected, indicating that their masses grew by mergers rather than by the slower process of growth of a single galaxy.

ULYSSES – Data collection using both the Hubble Space Telescope (HST) and other telescopes was completed for project ULYSSES, whose goal is to better characterize and understand young stars. It was the largest HST observing project ever, taking 3 years. HST collected ultraviolet spectroscopic data on almost 500 young stars, both in the Milky Way and nearby galaxies. Young stars were also observed in X-rays and visible light. Both large hot and smaller cooler young stars were targeted. The effects of young stars on their planet-forming disks were also observed. Some of the observed stars were in galaxies with very low heavy-element content, so should be behaving like stars that formed early in the history of the Universe, when all galaxies had low heavy-element content. It will take years to analyze all the data. It is hoped to learn much about how stars and planets form and develop.



Magnetic Black Hole Image – The team that brought us images of two black holes (or more precisely, the material just outside the black holes) has released a new image, derived from the same data, that shows the magnetic fields around the supermassive black hole at the center of our Milky Way galaxy, known as Sagittarius A*. Magnetic fields can be calculated from the measured polarization of light because a magnetic field causes photons of light to become polarized. The result is that the magnetic fields are stronger and more orderly than some scientists had predicted. The orderliness implies the black hole is spinning very fast, an unexpected result.

Massive Black Hole – A wobbling star found in data from the Gaia spacecraft has been found through ground-based telescopic observations to be caused by the star orbiting a black hole of mass 33 times that of our Sun. It was designated Gaia BH3. It is relatively close, as black holes go, at 2000 light-years away. Other than the supermassive black hole at the center of our galaxy, this new discovery is the most massive black hole known within our Milky Way. These black holes with far smaller mass than those supermassive ones are known as "stellar-mass" black holes, and are born when a fairly massive star collapses at the end of its life. The Milky Way stellar-mass black hole record holder was previously Cygnus X-1 at 21 Sun's masses. The mass of this new discovery is more in line with some of the black holes detected in other galaxies by LIGO gravitational wave detectors. A theory holds that the more massive stellar black holes are born by the collapse of stars low in heavier element content, which tend originally to form with more mass. The companion star to the new black hole discovery is indeed low in heavier element content, which implies the star that collapsed into this black hole was likely also low in heavier element content, having formed at the same time and place as the now companion star.

Binary Black Hole – A few years ago astronomers noticed that a galaxy 848 million light-years away, known as ASASSN-20qc, suffered a slight dimming in X-ray light every 8.3 days. A new study concludes that there is a smaller black hole orbiting the supermassive black hole at the center of this galaxy. Once per orbit, every 8.3 days, the smaller black hole hits the disk about the larger one, kicking up gas or dust that dims the larger black hole. Though the study astronomers were not able to get precise masses for the black holes, the larger one must be at least millions of times the Sun's mass, and the smaller in the range of intermediate black holes (IMBHs), which is hundreds or thousands of Sun's masses. It has been very difficult to detect IMBHs, so very few of them are known, though there is theoretical reason to believe they are common. The study astronomers are now searching for other systems like this one and have about a dozen candidates in mind. It is thought that this IMBH will eventually merge into the larger black hole.

Galactic Recycling – It has long been known that Stellar winds and supernova explosions spit material out of the plane of the Milky Way, and much of this material eventually falls back into the galaxy to supply the material that forms new stars. It's recycling on a galactic scale. A new study of this material using radiotelescopes and Planck space telescope data found less dust than expected, and the astronomers attributed this to extragalactic material low in dust adding to the material thrown out of our galaxy. This is controversial and so needs confirmation from more study.

Star Streams – Astronomers searching Gaia spacecraft data have found two new streams of stars orbiting our Milky Way. The streams are distinguished from other stars by their motions and composition. The discoverers have named the streams Shakti and Shiva after Hindu legendary persons. The streams contain very old stars, in the range of 12 to 13 billion years. This means they likely formed before the Milky Way and may have participated in the early growth of the Milky Way. Each of the streams has a mass of about 10 million Suns.

Faintest Dwarf Galaxy – Astronomers have found another dwarf galaxy orbiting our Milky Way, which turned out to be the faintest known galaxy, containing only about 60 stars. It was designated Ursa Major III/UNIONS 1, because it was discovered by the UNIONS survey and is located in the constellation Ursa Major. It lies about 30,000 light-years away. It is only about 10 light-years across, 10,000 times smaller than our Milky Way. The fact that the grouping of stars has held together for a very long time since its formation (about 10 billion years) implies that it must have a massive dark-matter halo (though its dark matter has not yet been measured), which qualifies it as a dwarf galaxy rather than a star cluster.

Binary Cepheids – A recent study found that 9 known Cepheid variable stars are binary Cepheids, that is, orbit about a companion Cepheid. Only one such pair had been previously known. The proof of being binary was found in 30 years of data taken by the OGLE variable star survey. The 9 binaries are located in the Milky Way and the Magellanic Clouds. Cepheids are used as distance indicators, since their absolute brightness can be determined from the period of variation. The distance is then calculated from their apparent brightness. So it is important to understand all we can about this type of variable. Being in a binary relationship allows astronomers to determine masses and other properties from measuring their orbits.

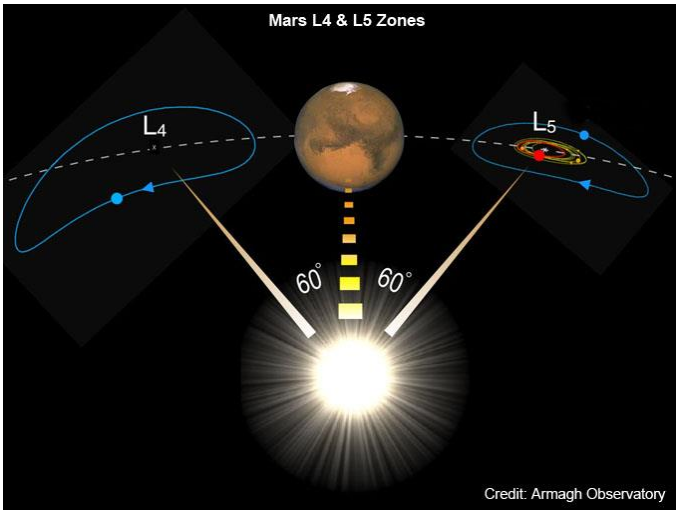
Stellar Winds – A research team has for the first time directly measured the stellar winds of Sun-like stars. Those stars are 70 Ophiuchi, epsilon Eridani and 61 Cygni. This was seen in X-rays, using the XMM-Newton space telescope, that were produced when the stellar winds hit surrounding material. Previous evidence of such stellar winds has been only indirect. All three have much stronger wind than our Sun, likely because these stars have stronger magnetic activity than our star. Such winds can strip planets of their atmospheres over long time periods.

CMEs Observed – The team running the Parker Solar Probe has released a report on what that spacecraft found regarding coronal mass ejections (CMEs) during its first 4 years of observation. 32 CMEs were seen, and 28 of those were well observed by Parker. The magnetic structures of CMEs were found to become more complex as they move away from the Sun. It is important to understand CMEs because they can affect power systems and telecommunications on Earth, not to mention aurora.

Martian Water – Rocks recently examined by the Curiosity Mars rover showed evidence of exposure to water, and from the geological layer they were found in, they formed much later than previously studied water-exposed Martian rocks. What this means is that water persisted perhaps hundreds of millions of years later on Mars than previously thought. This raises the probability of someday finding evidence of microscopic life on Mars. Previous estimates of when Mars surface water dried up were roughly 3 billion years ago.

Mars Sample Return – A recent audit of the Mars Sample Return program showed that it likely will run $4 billion over budget and/or take many years longer to complete than planned. NASA just announced that in response to the audit it is soliciting ideas from NASA organizations and industry on how to bring the cost down and save schedule. This is good news, as compared to the suggestion that the whole program be canceled. The Mars rover Perseverance has collected, and is continuing to collect, dozens of samples for the Mars Sample Return, but a Mars lander that takes off again and other parts of the program are still to be developed.

Mars Trojan – Trojan asteroids are ones that orbit in a planet's orbit, but roughly 60 degrees ahead of or behind the planet itself. These zones are known as the Lagrange gravitationally stable areas L4 and L5. Most (thousands) of the known Trojans share Jupiter's orbit, but a few are found in other planets' orbits. Astronomers just found the 14th Trojan associated with Mars. It was designated 2023 FW14. It is one of only two Mars Trojans at the leading (L4) Lagrange, while all the rest are at the trailing point. The two at L4 have similar spectra, so likely have similar origins. It has long been debated whether Trojans formed at the Lagrange points or formed elsewhere and were later captured. The data on FW14 is slightly supportive of capture but not conclusively so. This new discovery is estimated to have a diameter of roughly 1000 feet, which is quite small for a Trojan asteroid. Its orbit is somewhat unstable with respect to other planets' gravitation, so it may escape Mars' orbit in several million years.



Odysseus Update – Attempts were made to contact the Odysseus lunar lander during its second lunar day in the hope that it might have survived the harsh lunar night, which is 14 Earth days long. But Odysseus apparently did not survive. It was however declared a success, as all but one of its technology and scientific payloads operated before the first sunset on the landing site. It was the first privately developed spacecraft to land on the Moon.

SLIM Update – The Japanese spacecraft SLIM landed on the Moon in January, though tipped on its side by a rough landing. It was not designed to withstand the extreme cold and darkness of the lunar night, but now it has survived two lunar nights and resumed observations twice.

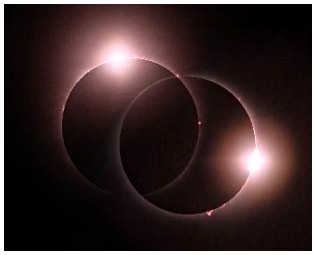
Bonus Pictures of the 2024 Eclipse Taken by OCA Members


Lloyd Zemmel


Alan Lang


Gregory Stein


Scott Young


Thomas Hill


Dave Cook


Daniel Schecter


Don Lynn

Another Look - Draco

May 2024
Dave Phelps

May 3, waning crescent, moon occults Saturn. 1.5 deg apart, in So Ca and Arizona it is a pre-sunrise event.
May 4 waning crescent moon occults Mars, in So Cal and Arizona they are very close at sunrise. On May 31 the moon occults Saturn and Neptune. Both have a very close approach in the AM. The Saturn occultation will be visible from Tierra del Fuego and Neptune's from Cape Town.

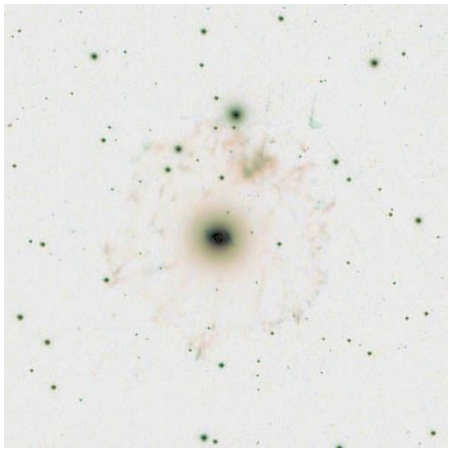
The New moon in May is on the 7th at 2023 PDT The Full moon in May is on the 23rd at 0653 PDT
In Spanish the New Moon is Mayo Luna Ilena, in German Vollmond im Mai, in Latin Maii Plenam Lunam, in Italian Luna Piena di Maggio, in French Pleine Lune de Mai, in Ukrainian Травневий Новний Місяць- Travnevyy Povnyy Misyats' and in Greek Πανσέληνος Μαΐου, Spansélinos Maΐou.

Meteors this month are the Eta Aquarids. They range from April 15 through May 27, peaking at May 05, around 0400.
The moon will be 26 days old, so should not be too great a hindrance.
Variable star this month is V Hydrae **https://www.aavso.org/featured-variables**

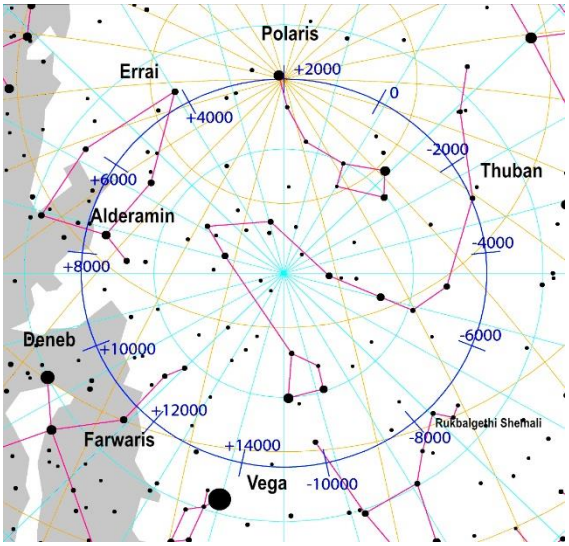
Lots of early morning stuff to see. On May 9, Mercury is at greatest western elongation, on the 13th, Mercury is at its highest in the morning sky, and on the 14th, Mercury is at dichotomy (half-moon shape). Jupiter is at solar conjunction on May 18.

Latin Dragon, Spanish Dragòn, French Dragon, German Drache, Greek δράκων drakōn, Italian Drago

"You are all poets." I told a gathering of amateur astronomers at the 1983 annual Texas Star Party. At first, they reacted with silence, then they began to agree. The common thread that binds amateurs together is a love of the grandeur and beauty of the starry deeps. While some may claim it's the science of astronomy that interests them. I believe that deep down it is the ultimate experience of the night sky that holds the real attraction.
-- from "Deep Sky Wonders" Walter Scott Houston published in "Sky and Telescope" magazine.


Cat's Eye nebula inverted from Eric Seavey

When Scotty wrote this, it was a preamble to a column on NGC 6543, the "Cat's Eye Nebula". Scotty went on to talk about its appearance in everything from a 1" homemade refractor to a 4" Clark to a 20" Dob and even to the 60" at Mt. Wilson. He wanted you to look at the Cat's Eye and really see it. What is its color? Is it blue or do you see green? How big is it? What power are you using to get the best view? Can you see its central star? Is it 9th or is at 11th magnitude? How about the shell? Scotty never heard from an amateur reporting on seeing it. Back then in the early days the shell wasn't thought of as possible. It wasn't until 2002 that APOD published an "Isaac Newton" image of the shell. What can we see with our modern optics and (hopefully) refined skills? John Garrett uses a variety of amateur telescopes to record what the Cat's Eye will look like to you. The reverse image to the right shows what Eric Seavey captured in 2018.
https://ocastronomers.org/wp-content/uploads/2018/12/Cats-Eye-Nebula.jpg



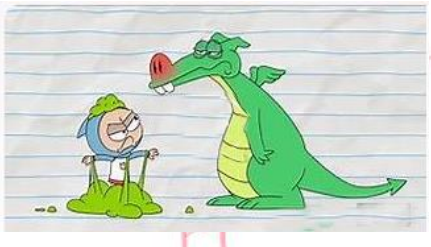
Draco contains eighty stars, including two of the 2d magnitude, three of the 3rd, and sixteen of the 4th--

"The Dragon next, winds like a mighty stream:
Within its ample folds are eighty stars,
Four of the second order.
Far he waves His ample spires, involving either Bear."

The north ecliptic pole lies in Draco, and the south ecliptic pole in Dorado. It is usually explained that the earth wobbles on its axis like a kid's top spinning in circles. The wobble the earth makes is a 25,800 year cycle and the cone is about 23½^0 from the vertical. Deneb will be the pole star in about 8,000 years, Vega in about 12,000 years and Thuban will be back to being the north star in 21,500 years. Can't wait.

The funniest story about Thuban is its relationship to the pyramid builders. Thuban was the pole star 4500 years ago and while it is clear that the ancient Egyptians of the 4th dynasty used astronomy to mathematically align the great pyramid, the science dates and the archaeological dates do not coincide to give Thuban any special role.

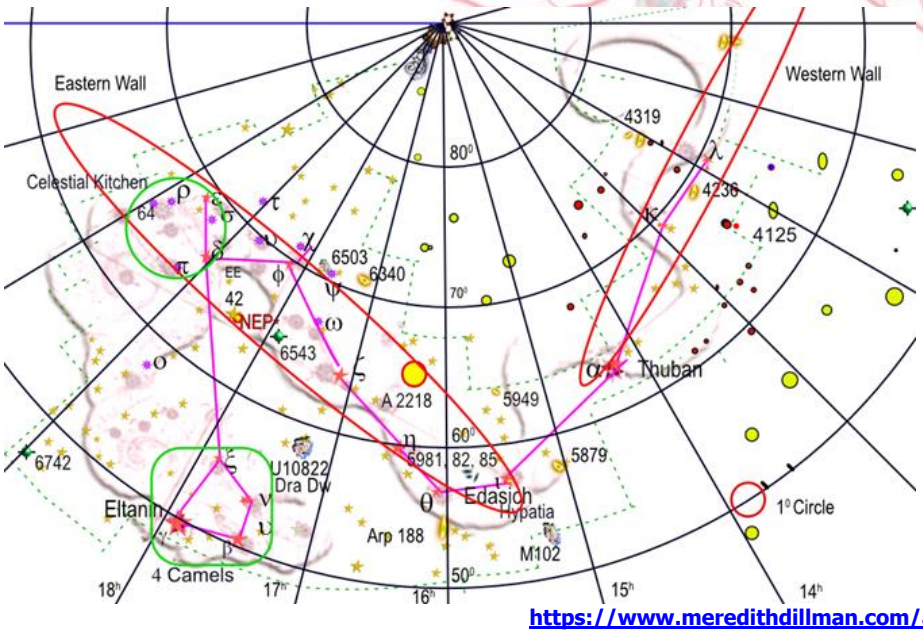
Draco has 14 named stars that go back to very early in its defined life. γ Draconis is Eltanin, the brightest star in Draco at 2nd mag. The name comes from the Arabic meaning the great serpent. β Draconis's name is Rastaban meaning the head of the serpent. δ Draconis is named Altais meaning goat. ζ Draconis's name is Aldhibah coming from the Arabic for Hyenas. Edasich is the name for ι Draconis. Edasich is famous. She is the first giant star found with a planet and she also has a debris disk. The exoplanet's name is Hypatia. Edasich is derived from the Arabic for male Hyena, Hypatia who was named much later, from the Greek meaning highest or supreme. χ Draconis and φ Draconis are named Batentaban Borealis and Batentaban Australis. Being right there at the first loop after the head of Draco, their name means the belly of the serpent.



α Draconis is more famous for its position than for its brightness. Its name is Thuban which means the snake and is between 3rd and 4th magnitude. His claim to fame came 6000 years ago when for 4300 years he was the pole star. There is some question about its variability. Different magnitudes have been given it over the centuries. Admiral Smyth in 1844 measured it at 3.25. Today it is measured half a magnitude fainter at 3.7.

ξ Draconis's name is Grumium, not Greek and not Arabic, but Latin, given its name by Ptolomy. Xi is down by Draco's jaw. Grumium comes from the Latin for snout.

Shǎowèi, κ Draconis, almost 4th magnitude, has an interesting history. On the chart you will see a partial oval from Thuban up past λ and on into Ursa Major and Camelopardolis. This is the "right wall" or historically, "the Second Star of Right Wall of Purple Forbidden Enclosure", representing the "Second Chief Judge". Kappa κ also has an interesting history as an ignored pole star. Kappa was closest to the pole after Thuban vacated the spot for almost 1800 years but was never acknowledged because Kochab, β Ursae Minors, was also nearish and 2nd magnitude.



https://www.meredithdillman.com/art-shop/draco-constellation-art-print

Alsafi is the name for σ Draconis. It is historically a part of a three star asterism containing sigma, epsilon and tau. Alsafi is the official name of σ sigma. The name comes for the tripod that held the nomad's cook pot. Interestingly, it is also part of a kitchen in Chinese astronomy, marked on the charts and consisting of rho, pi, delta, epsilon and **64** Draconis.

Nu Draconis along with gamma, Mu and Xi make up the head of the dragon and the "Mother Camels" in Arabic. Kuma, the proper name for Nu, seems to have no etymology. If you ask Google, it will tell you it translates to the Japanese for bear.

You will find 42 Draconis up by the NEP in the curve of the neck. 42 is named Fafnir and its planet named Orbitar. Orbitar is a made-up name referencing NASA space launches. Fafnir is a Norse dwarf that was turned into a dragon. The names were nominated to the exoplanets competition by Brevard County, FL.

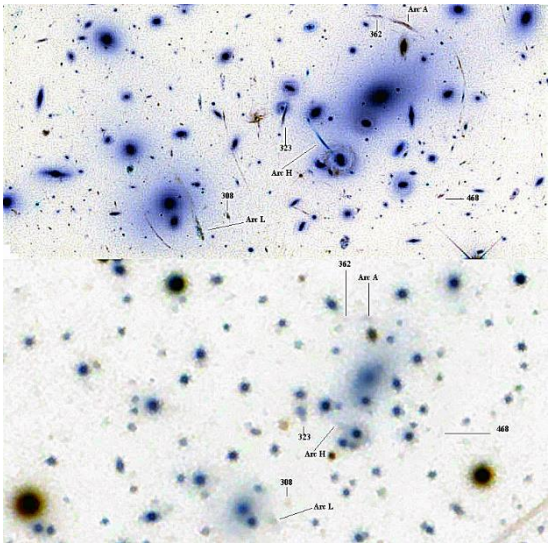
I read and reread all of Frank Herbert's Dune books, admiring the Freman and despising those Harkonnens. μ Draconis is Arrakis, now spelled Alrakis. Mu is a multiple star system. Alrakis B is a double and Alrakis C is at 14th magnitude. In the novels, Arrakis is a planet in the Canopus star system.

Draco is big, over 1000 square degrees, in the top ten of constellation's size. It has over 300 extrasolar planets, 19 galaxies of 12th magnitude and brighter and the number goes up to 29 when we go into the 13th.

There are two spectacular planetary nebula and two Caldwell objects, C-3 (NGC 4236), up by κ kappa, is a loosely mottled galaxy that can be seen at 10th magnitude. C6 is NGC 6543, the Cats Eye Nebula. Burnham lists 116 double and multiple star systems and 49 variables.

There are such a number of deep sky objects in Draco that it stretches the imagination and equipment of just about any amateur. Abell 2218 is huge. Nearly 10,000 galaxies and one of the strongest gravitational lenses known.

The professional images by Hubble of Abell 2218 are something to marvel at, but visually it will be hard to find. A diligent search found that the brightest galaxy in the frame is UGC413. I included the specs on this image, finding it hard to believe that an amateur could do such work. If you connect to the link and blow up the image, the arcs show up quite well.



Abell 2218 Galaxy cluster from Rick Johnson
https://images.mantrapskies.com/catalog/OTHER/ABELL2218/

Then there is the Tadpole galaxy, official name Arp 188, or the even more compelling name of UGC 10214. At 14th magnitude the Tadpole will not be easy to see, but it is possible to see the tidal tail and maybe even its disrupter galaxy hidden between its spiral arms with enough aperture.

M102, 9th mag, also known as NGC 5866, has been an enigma since added to Messier's list. It was discovered in the late 1700's by Messier or maybe Méchain and almost certainly a decade later by Herschel. Since we amateurs today seem to believe the giants on whose shoulders we stand could do no wrong, the controversy over which galaxy they were talking about continued until recently when the IAU decided that M102 and 5866 were the same animal. Photographs tend to blow out the galaxy somewhat. A decent night and some power should resolve the dark lane in the middle of the spindle with even a six inch Newtonian.


ARP188 from Jason Guenzel


M102 aka NGC5866

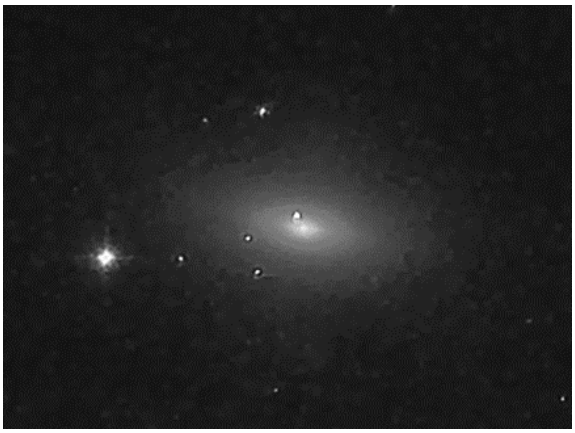

NGC4236

https://www.astrobin.com/full/288378/B/
https://ocastronomers.org/wp-content/uploads/2018/12/NGC-5866-36m-6F8r1-copy.jpg
https://www.coldphotons.com/zen_astro/astro_images/NGC4236_LRGB_web.jpg

N4125 and N4236 are up by the tail of Draco and noticeable because they are both in the 10th magnitude. 4125 is a slightly flattened elliptical that Burham tells us has a bright nucleus that should be easy for you to pick out. 4236 is different. It is a mottled spiral with faint surface brightness but as big as the ¾ moon on its large dimension. Try to find the knots of star formation on the spiral arms.

This rather remarkable image of 4125 taken by Kathy Walter in 2016, also shows a supernova.

You may be able to see 5982 visually. It's 11th magnitude with a somewhat brighter nucleus, but small. 5985 is 12th, the big spiral next to it and 5981 is the other edge-on galaxy, listed at 14> mag. The small group is known as the Draco Triple.



NGC4125 Kathy Walter
https://www.astrobin.com/full/252823/0/

UGC10822 Draco Dwarf Spheroidial Galaxy
https://cosmic-colors.com/galaxies/draco-dwarf/ Jarrett Trezzo

NGC5981, 82, 85 Jussi Koponen
https://www.astrobin.com/full/169092/0/

As we continue our discussion on Dwarf galaxies, Draco offers us an object that should be easier. The Draco dwarf is 10th magnitude and, as you can see, has a number of stars usable as finders. The galaxy is listed as a spheroidal dwarf galaxy but is slightly more oval than round. Still, it is slightly larger than the full moon, so I expect it to nearly fill the field of view of a 25mm to 32mm eyepiece.

Draco is old. Writers concentrate on the Greek legends, with a few references to Phoenician, Chaldean and Roman authors. But Draco goes back much further than that. 30,000 years ago, Thuban was the pole star. That is near the peak of our last ice age and people were migrating from Africa to the east and to the west and Neanderthals were living in the frozen north. Draco was right there for the cave artists, hunters and spiritual leaders.

The stars of Draco have certainly moved, and our rock art could also be serpents and imaginative steeds. What we do know is that our ancestors in the last ice age ascribed importance to that sinuous line of stars circling the north.
And, as Scotty said; Since Then, Till Now, We are All Poets.

Dark Skys Dave

Advertisements

Buy, Sell or Trade some of your gear? This is where club members can place advertisements. Please contact the editor at newsletter@ocastronomers.org to place an advertisement or to learn more about placing one. There is no cost to club members for non-commercial advertisements in the newsletter.

Each advertisement may be run for 3 consecutive issues, after which it will be removed. The advertiser may resubmit it for inclusion after a one-month hiatus.

For Sale contact David W. Pearson p.davidw@yahoo.com

- Sky-Watcher Star Adventurer astro pkg (no Wi-Fi), Star Adventurer DEC bracket, Latitude base, and counterweight. Motorized equatorial mount w dial selectable lunar, solar and star tracking modes. Vixen-style dovetail saddle, integrated polar scope with illuminator, shutter interface control for compatible DSLR's, ST-4 Auto-Guider port, mounts via 3/8- or 1/4-inch tripod threads, 11 lb payload. Runs on four AA batteries or Mini USB port for external power and updating FW. $ 200

This item is local pickup only. If interested, please send me email requesting a complete description.

For Sale contact David W. Pearson p.davidw@yahoo.com

- Sky-Watcher S21110 AZ-GTi Mount (no tripod). Multi-purpose alt-azimuth go-to mount, 11-lb payload, Vixen-style dovetail. Spring loaded worm gears and Freedom Find™ dual-encoder technology. 42,900+ object database, Sidereal, lunar, and solar tracking speeds. Controlled with SynScan Pro app for iOS and Android. Built-in Wi-Fi, DC operation. $ 250

This item is local pickup only. If interested, please send me email requesting a complete description.

For Sale contact David W. Pearson p.davidw@yahoo.com

- DWARF II Smart Telescope (Deluxe). Compact & Ultra-Portable. Smartphone Control, One-Click GOTO, AI-Powered Object Tracking, auto star Tracking & stacking, Gigapixel Panorama. Replaceable Battery & Type-C Charging. Includes 64GB microSD Card, mini tripod, Carrying bag, filter adapter, UHC filter, ND solar filter (2). $ 300

This item is local pickup only. If interested, please send me email requesting a complete description.

For Sale contact Richard Brennan 562-480-7215 cell dickbrennan101@yahoo.com

- Losmandy D-series dovetail rail and adjustable rings. DM8 + DR100 with 2 radius blocks. r mounts and rings for same. $ 160
- Meade Equatorial SuperWedge, hand-knobs for all adjustments, azimuth adapter for tripod, central nut with compass, LX200 base hex mounting screws, and Teflon tripod washer 10" dia. x 1/8" (Jim's Mobile). $ 175
- QHY 5L-II-M Planetary/Guide CMOS camera, like new. $ 70
- Meade 644 flip mirror $ 70
- SBIG ST-237 cooled camera with filter wheel, processor, software, relay box, and DB-25 cables. The Windows XT computer is what is missing. SBIG hasn't supported this cooled camera for many years. $ 60

For Sale contact Steve Borgens 408-500-2628 steveborgns@yahoo.com

- TPO 10" Truss Tube f/7.9 Ritchey Chretien Reflecting telescope $1900
- Astro-Physics CCDT67 Tele Compressor (brings scope to 1500mm FL @f5.9)
- Starlight Inst. Howie Glatter Laser Collimator - 2" / 635 nm-Large Threads
- Orion 2 inch Star Diagonal

All listed equipment are in excellent condition. $1900 includes all items.

For Sale contact Vance Tyree 626-372-4856 vctyree@verizon.net

- iOptron CEM60EC mount with encoder on RA axis, hard case $ 2500
- iOptron model 8030 portable pier 48 inch height
- iOptron 2 inch tripod, model 8021ACC with carry bag
- 21 lb counterweight

The mount handles optical payloads up to 60 pounds. It has unguided periodic error of 0.5 arc-sec (RMS). I used this mount without auto-guiding with sub-exposure times of up to 300 seconds without showing any star trailing in RA or DEC when the polar alignment was within 1 arc-min or better. Closest equivalent mount today is CEM70EC which costs $4400.

The portable pier has a 6" diameter vertical tube (48 inches tall) equipped with removable legs and turnbuckle braces making a very rigid structure that has a 46 inch maximum leg spread and screw jacks for leveling.

For Sale contact Dave Cook 949-689-0853 cell

- CELESTRON MOUNT, Advanced Series GT-5 Go-To equatorial mount and tripod $ 500
- Includes full mount, hand controller, tripod, 11 lb. counterweight, CG-5 polar alignment scope, 115-volt AC and 12-volt DC auto lighter power cords, CG-5 polar alignment scope, hard-copy Celestron Instruction Manual

Mount is autoguider capable, capacity about 30 lbs, will carry Celestron CE-11 OTA, Saddle fits both Celestron CGE and Losmandy rails, Go-To catalog contains approximately 45,000 celestial objects. Current equivalent mount is Celestron Advanced VX mount, price new $1179.

For Sale contact Dave Cook 949-689-0853 cell

- MEADE LX200 GPS, 10-inch diam. mirror $2600
- Includes heavy-duty mount and tripod, 10-inch OTA, Heavy-duty optional equatorial wedge, 115-volt AC to 12-volt power adapter, all normal accessories
- Accessory & eyepiece utility tray, padded soft carrying case, soft dew shield, 1-1/4 90-degree diagonal
- Peterson Engineering modifications: ball-bearing focuser mod, precision brass drive gear mod

- Electronic focuser available for additional $150 (cost new $300) $ 150

This system can be used in either azimuth or equatorial mode. Mount and telescope just returned from Meade factory mechanical/electrical refurbishment and update costing $500+ (still in shipping box from Meade). Current equivalent Meade LX200, 10-inch GPS, priced new is $5899

Note: This is my favorite telescope, but due to anti-cancer drugs, I no longer have the strength to singlehandedly maneuver this system.

From the Editor

Due dates for submission of articles, pictures and advertisements

Issue	**Due date**
June	25 May
July	22 June
August	20 July
September	24 August

SIRIUS ASTRONOMER
www.ocastronomers.org
The Newsletter of the Orange County Astronomers

Nonprofit Organization
U.S. Postage
PAID
Santa Ana, CA
Permit No. 1468

NEWSLETTER OF THE
ORANGE COUNTY ASTRONOMERS
P.O. BOX 1762
COSTA MESA, CA 92628

DATED MATERIAL
DELIVER PROMPTLY

RETURN SERVICE REQUESTED

CONTACT LIST

WEBSITE: https://ocastronomers.org Phone 949-266-9777 Starline 24-Hr. Recording: 714-751-6867 Anza Observatory: 951-763-5152

BOARD OF DIRECTORS

		board@ocastronomers.org
President	Barbara Toy	btoy@cox.net
Vice President	Reza AmirArjomand	reza@ocastronomers.org
Treasurer	Charlie Oostdyk	charlie@ocastronomers.org
Secretary	Alan Smallbone	alan@ocastronomers.org
Trustee	David Searle	dwsearle@gmail.com
Trustee	Mark Price	mark@ocastronomers.org
Trustee	Doug Millar	doug@ocastronomers.org
Trustee	Sam Saeed	sam@ocastronomers.org
Trustee	Brett Nordby	brett@ocastronomers.org
Trustee	Gary Schones	gary378@pacbell.net
Trustee	John Hoot	jhoot@ssccorp.com

COORDINATORS

Anza House Coordinator	Manuel Baeza	manugb33@yahoo.com
Anza Site Maintenance	Don Lynn	dlynn@ieee.org
Beginner's Class	David Pearson	p.davidw@yahoo.com
Orange County Star Parties	Steve Mizera	mizeras@cox.net
Explore the Stars	Bob Nanz	bob@nanzscience.com
Librarian	Karen Schnable	karen@schnabel.net
Membership / Anza Pads	Charlie Oostdyk	charlie@ocastronomers.org
Observatory Custodian / Trainer / Member Liaison	Barbara Toy	btoy@cox.net
Outreach	_____	outreach@ocastronomers.org
Sirius Astronomer Editor	David Fischer	newsletter@ocastronomers.org
Telescope Adoption Program	Jake Brown	scopes@ocastronomers.org
WAA Representative	Jon Montgomery	56scooter@gmail.com
Webmaster	Reza AmirArjomand	webmaster@ocastronomers.org

SPECIAL INTEREST GROUPS (SIGs)

AstroImagers SIG	Alan Smallbone	alan@ocastronomers.org
Astrophysics SIG	Mark Price	mark@ocastronomers.org
Dark Sky SIG	Barbara Toy	btoy@cox.net
Youth SIG	Doug Millar	doug@ocastronomers.org