



Copyright 2022 J. L. Floyd

This nebula (IC 405) is called the Flaming Star. Jerry Floyd captured it from Anza in October 2022 using a Celestron RASA-11, ASI2600MC camera and dual band filter.

Upcoming Events - free and open to the public

Beginner's class	Friday, 5 July at 7:30 to 9:30 PM IN PERSON This is session 5 of the class, the in-person session "How to Use Your Telescope". Bring your telescope to class and get some help learning to set it up and use it.
Club Meeting	Friday, 14 June at 7:30 to 9:30 PM IN PERSON at Chapman University and ONLINE "What's Up?": Lonny Buinis from RVCC Main speaker: Chuck Allen from Astronomy League presenting "Extreme Astronomy"
Open Spiral Bar	Saturday, 15 June 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.
OVRO Tour	Friday-Saturday, 7-8 June at Owens Valley Radio Observatory site in Big Pine, CA IN PERSON Details on OCA website.
Star Parties	Saturday, 8 June 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

June marks the official start of summer with the Summer Solstice, which is on June 20 this year. Looking ahead, our annual Starbecue potluck party is coming up. We most often have these on the day of the July Anza Star Party, but that falls on the 4th of July weekend this year (on July 6th, to be exact), and it's likely a lot of people will be out of the area. So, our Starbecue this year will be on the day of the August Anza Star Party, on August 3rd. Please mark your calendars and plan to be there – as usual, we plan to convene in the shade behind the club observatory around 5:00 p.m. Bring a chair, your drink of choice, and a dish to share while you enjoy the camaraderie of fellow club members. As usual, the club will provide plates and utensils.

Returning to considerations of June, we're hoping we won't have too much of a problem with June Gloom this year. At least the nights will be getting more comfortable for viewing, temperature-wise, though perhaps the price for that will be uncomfortably hot days.

Another concern as we head into summer...

Now that the weather is warming, all the weeds at our Anza site are growing fast. We've had a bumper crop of grasses and can expect mustard and other shrubby plants to show up as well. This year we have an even greater concern regarding all this growth than usual – the area around our Anza site is considered a high-fire-risk area, and the insurance company that has been providing coverage for our Anza site won't renew our policy this year. Our agent is searching for replacement insurance for us, and reducing the fire risk on our site as much as possible will help in that search.

The annual plants on our site, including the grasses and mustard, generally have a cycle of vigorous growth until they go to seed, then they die back and dry out. They can burn at any point, but they are most flammable when they are dry. Clearing these plants from common areas as well as areas around viewing pads, observatories, and other buildings on site (such as Anza House) reduces the chance of fire on our site and, also important from an insurance view, reduces the chance of damage to the structures on the site if a fire does come through.

We're planning to pay someone to come in to do an overall clearance of weeds on the site, but inevitably there will be additional growth, especially if we get monsoonal thunderstorms. It's really very important this year that we keep our site as defensible as we can, both because of the insurance situation and to minimize damage if a fire does come through. When a fire burned through part of our site in the early 2000s, a major reason we didn't have structure damage was that people had generally done a good job of keeping the weeds under control after the initial clearance, making the site more defensible, and making it easier for the firefighters to keep the fire away from the buildings. Anything those of you who spend time at Anza can do to help demonstrate our preparedness is appreciated.

Meanwhile, best wishes to all of you as we head into summer viewing!

© Barbara Toy, May 2024

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.

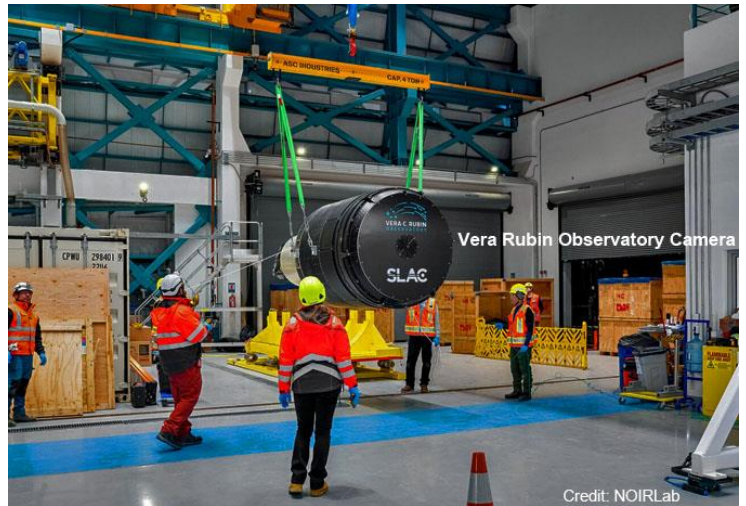
AstroSpace Update

June 2024

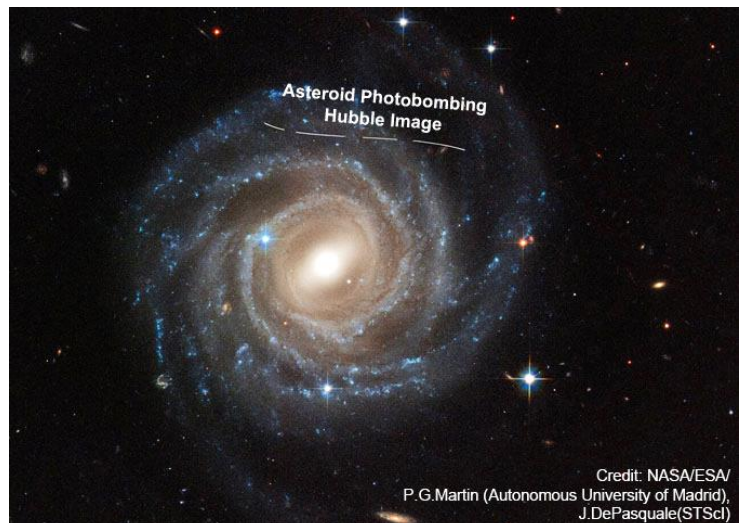
Astronomy and space news summarized by Don Lynn from NASA and other sources

Voyager 1 Repair – In November, data sent to Earth by the Voyager 1 spacecraft turned into gibberish. Spacecraft controllers were able to get a readable dump of spacecraft computer memory and determined that one chip of memory in the Flight Data Subsystem computer had gone bad. After very careful planning, in April they put some of the code that had been in that bad chip into other places in the memory and enabled the spacecraft to send good (non-gibberish) engineering data. Using the same technique with code that handles science data, controllers on May 22 resumed normal operation of 2 instruments. They hope to soon have Voyager 1 back in full operation. This spacecraft and Voyager 2, at 46 years old, are the longest operating spacecraft ever. Having years ago left the influence of the Sun's magnetic field, the 2 spacecraft are taking data on interstellar space regarding particles and fields.

Rubin Observatory Camera – The last major part of the Vera Rubin Observatory, its camera, has arrived at the telescope, atop Cerro Pachón, in Chile. It is the largest digital camera ever, at about the size of a car and with 3.2 billion pixels. Two decades were spent designing and implementing the camera. It was flown from California to Chile by a chartered cargo 747 aircraft, then trucked up the mountain at about walking speed. The camera has 3 corrector lenses to cancel aberrations over an extremely large field of view. The first corrector lens, at a diameter of 61 inches, is the largest optical lens ever made. The mission of the Rubin Observatory is for 10 years to repeatedly image 44% of the entire sky looking for anything that changes position or brightness. The plan is to repeat each image 82 times per year. An additional 17% of the sky will be imaged less frequently. Astronomers expect to find a million changed objects per night of observation. The images will be taken every 20 seconds and will reach magnitude 24.5. It is expected to begin operation in late 2025. Astronomers expect the observatory to make discoveries in the areas of dark matter, dark energy, mapping of our Milky Way, small Solar System bodies, and more. Terminology: The observatory is named Vera Rubin in honor of the astronomer who proved that galaxy rotation required there to be dark matter in galaxies. The telescope itself is named Simonyi in honor of the donor of funds to build the primary telescope mirror. The program of observation is known as LSST.



Asteroids – Astronomers used about 11,000 volunteer citizen scientists and machine learning computer programs to search 19 years of Hubble Space Telescope images for asteroids that photobombed the Hubble images. They found 1701 asteroids, of which 1031 were previously undiscovered bodies. About 400 of these were smaller than a kilometer in size. Such small asteroids are not often discovered because they are so dim unless passing very close to Earth. Because of the motion of Hubble during time exposures, curvature is imposed on the asteroid images that allows their distances to be calculated, and estimates made of their orbital shapes. Most of the asteroids seen in the study were found to be in the main asteroid belt, which lies between the orbits of Mars and Jupiter.



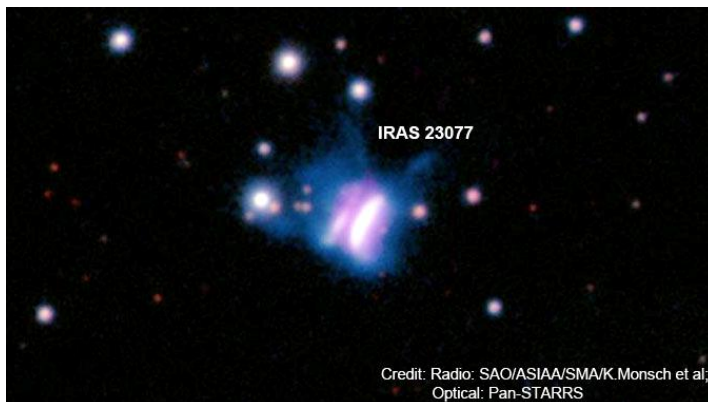
Quasi Satellite Origin – An asteroid named Kamo'oaewa is a quasi-satellite of Earth. That is, it appears to orbit about Earth, but will eventually wander away. A new study of its properties shows that its chemical makeup and other properties match only the lunar crater Giordano Bruno, and so is likely debris cast off the Moon by the impact that formed that crater millions of years ago. The asteroid's diameter has been estimated from its brightness to be between 118 and 197 feet. It will be visited by a spacecraft launched by China in 2025.

Jupiter and Io – The Juno spacecraft has made two close passes by Jupiter’s moon Io. It took great images of a huge lava lake and other features on Io, with particularly close-up images of polar regions. Two recent studies of Io concluded that the tidal heating of Io, which makes that moon the most volcanically active place in the Solar System, has been going on for billions of years, perhaps since the moon formed. Juno has continued its study of Jupiter. A new finding is that near the planet’s equator the atmosphere has a fairly high water content, supporting the long-time belief that the Galileo probe’s very low reading of water content was due to having measured it in a particularly dry spot.

Young Asteroid Moon – I reported here last December of the discovery of a contact binary moon (later named Selam) found to be orbiting the asteroid Dinkinesh when the Lucy spacecraft flew by. A new study of it revealed that the contact binary is only 2-3 million years old, far less than the age of the Solar System. Computer simulations of the system that include tidal forces and the effects of the Sun’s radiation indicated this young age.

Eclipse Comet – SOHO, a spacecraft that monitors the Sun’s vicinity with coronagraphs, discovered a comet just before the April 8 solar eclipse, which hours later crashed into the Sun. It is the 5008th comet discovered in SOHO images since it began observations in 1995.

Largest Planet-Forming Disk – A nebulous object known as IRAS 23077, which was discovered about 8 years ago, has finally had its nature determined. It is a planet-forming disk around a young star, seen edge-on. This was determined from radio observations made with the Submillimeter Array in Hawaii. It has been described as looking like a hamburger or a butterfly. It is about 1000 light-years away. It is the largest planet-forming disk known. If placed in our Solar System, it would reach about 300 times the size of Jupiter’s orbit.



Exoplanet Temperature Mapped – The James Webb Space Telescope (JWST) was used to monitor an exoplanet known as WASP-43 b during an entire rotation, allowing a map to be made of the temperature at all longitudes of the planet. It is a hot Jupiter, in that it is a gas giant planet orbiting quite close to its star. It is tidally locked to its star, presenting the same face always toward that star. These observations should have shown one side of the planet to be far hotter than the other, but the temperature difference was not that great. This implies that extreme winds (estimated at over 5000 mph) carry a lot of the heat from the star side to the dark side. The pattern of temperatures measured shows this wind has to be blowing eastward. Another surprise is that JWST did not detect methane, a common component of gas giants. This also can be explained by extreme winds, which do not allow atmosphere to stay long in the zones where the temperature would normally promote methane-producing chemical reactions. The observations also implied that the hot side has a clear atmosphere and that the dark side has thick, high clouds. Water vapor was detected on both the hot and dark sides. The planet is 280 light-years away.

Rocky Exoplanet Atmosphere – Researchers using JWST have made the first measurement of an atmosphere on a rocky exoplanet. Though rocky, it isn’t very Earth-like because it is very close to its star and therefore quite hot, so hot that its surface is likely molten lava. The atmosphere is probably rich in carbon dioxide or carbon monoxide, with a likely source being gas bubbling up with the lava. The planet is 55 Cancri e and is 41 light-years away. The temperature difference measured between the star-facing and the dark side of the planet implies that there is an atmosphere with winds moving heat between the sides.

Earth-Size Exoplanet – An exoplanet about the size of the Earth has been discovered orbiting a small cool red dwarf star. From that star’s rate of consuming hydrogen, it is calculated that the star and its planet will likely remain for 100 billion Earth years. The planet is known as Speculoos-3b and is 55 light-years away. The planet’s orbital period, or its year, is only 17 hours long. Orbiting this close means it is likely quite hot, in fact too hot to retain an atmosphere. It is probably tidally locked, with one side always facing its star.

Another – An exoplanet just smaller than Earth, but larger than Venus, has been discovered orbiting the red dwarf star Gliese 12, which is only 40 light-years away. Further, this planet is in the habitable zone, that is, at a distance from its star where the temperature would allow liquid water to exist. It is not known whether the planet has an atmosphere, so further observations, perhaps with JWST, are needed to determine that. The planet, known as Gliese 12b, orbits its star every 12.8 Earth days.

Cotton Candy Density – Astronomers measured the mass of a gas giant exoplanet, known as WASP-193b, whose diameter is about 50% larger than Jupiter, and found that it has an extremely low mass, and therefore density. That density is about the same as cotton candy. This is the second lowest known density of any exoplanet. Astronomers are unable to explain how such low-density planets could form. Astronomers hope to make observations of its atmosphere to try to understand this planet. Every 6.25 Earth days it completes an orbit of a Sun-like star about 1200 light-years from us.

Rogue Planet Discovered – Rogue or free-floating planets are ones that do not orbit a star. They are difficult to discover because the radial velocity and transit methods of discovery do not work without a star. Theory says there should be a lot of rogue planets though, perhaps even outnumbering orbiting planets. The planet-finding space telescope TESS found its first rogue planet, not by its transit dimming a star, but by its gravitational lensing when it randomly transited and brightened an unrelated star.

Solar Sail – NASA has launched and deployed a solar sail spacecraft known as the Advanced Composite Solar Sail System. The launch vehicle was an Electron rocket built by the company RocketLab. Sunlight pressure on its sail is its means of propulsion to lift out of low orbit. The sail is a square about 10 yards on a side and was launched folded up in a tiny CubeSat.

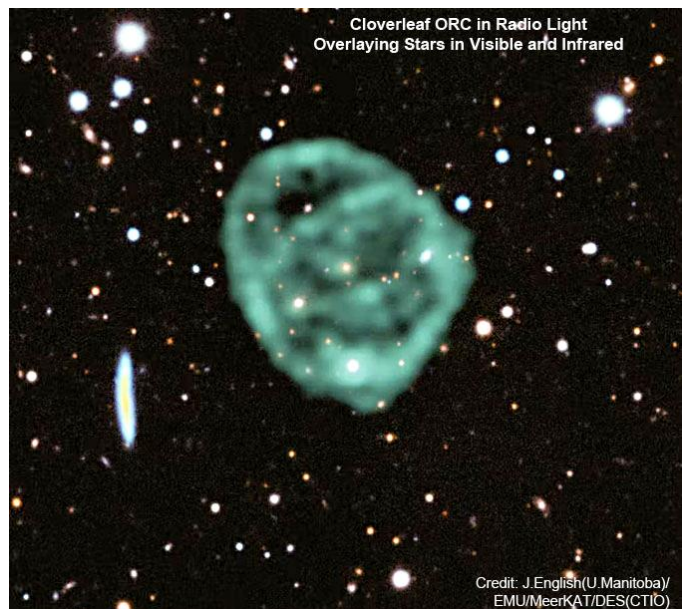
First Generation Stars – The first stars that formed after the Big Bang had to be made of just hydrogen and helium. For historical reasons, that first generation is known as Population 3 stars. Later generations of stars include heavier elements than these, which were made within the stars of earlier generations. But stars made of just hydrogen and helium tend to have huge masses, and that causes them to consume their fuel in just a few million years. So, all the Population 3 stars have ended their lives long ago. Astronomers are looking for evidence of Population 3 stars in extremely distant galaxies, which we are seeing as they looked when the light left there shortly after the Big Bang. Individual stars this distant are too dim to see. So JWST took spectra of one of the most distant known galaxies, known as GN-z11, to try to detect doubly ionized helium, which is produced by very hot massive stars shining on interstellar helium. They found the spectrum of doubly ionized helium, and they believe it is from Population 3 stars, though they have not been able to rule out other sources of this double ionization. The conclusion is that maybe Population 3 stars have been detected.



Old Stars – Astronomers have found 3 of the oldest stars in the Universe located in the halo of our Milky Way galaxy. They formed between 12 and 13 billion years ago. They orbit the galaxy in the opposite direction to most stars, which implies they likely formed in a smaller galaxy and were captured by the Milky Way. The stars were found by searching through some previously made observations for stars with exceptionally low concentrations of strontium and barium in their spectra. This indicates that the stars formed before many generations of stars created elements heavier than hydrogen and helium. The astronomers involved plan to continue looking for very old stars using the same search techniques.

Heavy Elements on White Dwarfs – Theoretically any heavy elements that fall into a white dwarf star should soon (in astronomical time) sink, yet observations of white dwarfs often find heavy elements sitting on the surfaces. A new study appears to explain this. Computer simulations of white dwarfs showed that when ordinary stars collapse to white dwarfs at the ends of their ordinary star lives, they often collapse asymmetrically, bumping the resulting white dwarf out of its position. The simulations showed that this bumping resulted in disturbances in orbiting planets and asteroids that lasted for more than 100 million years, all the while promoting collisions of those smaller bodies with the white dwarf. This appears to explain the observations.

Cloverleaf ORC – Since their discovery about 3 years ago, astronomers have found 8 objects now known as Odd Radio Circles (ORCs). They are indeed circles and are until now seen only in radio light. They appear to each surround one or a few galaxies. The source of energy required to emit the radio signal of an ORC is unknown. New observations found in X-ray light a known ORC, which had been dubbed the Cloverleaf. The X-ray emission showed that the Cloverleaf surrounds 2 separate groups of galaxies that collided and merged. This collision may be connected to the radio emission, but there are other colliding groups of galaxies known that do not have such radio emission. One theory is that this collision produced unusual shock waves that power the radio emission. Another theory is that a supermassive black hole is also involved in producing the radio emission. More data in both radio and X-rays is needed to understand ORCs.



Lunar Sample Mission – In early May, China launched its spacecraft Chang'e 6 on a planned 53-day mission to retrieve a sample from the far side of the Moon. The Chang'e series of missions is named after the Chinese moon goddess. In order to maintain contact with the spacecraft while it is behind the Moon, a previous launch put a communications satellite known as Queqiao 2 into an Earth-Moon Lagrange L2 halo orbit. From there Queqiao can radio directly to the back side of the Moon and the Moonward side of the Earth. France, Sweden and Pakistan contributed instruments for Chang'e 6.

Highest Observatory – The University of Tokyo has completed building the Tokyo Atacama Observatory (TAO) in Chile. It is at the highest elevation of any observatory on Earth, at 18,500 feet. The site was chosen because the high elevation allows the telescope to see farther into the infrared than lower sites. The TAO telescope has a primary mirror of 6.5-meter diameter. Technically it was already the highest observatory, ever since the first test telescope (of 1-meter diameter) was installed there in 2009.

Boeing's Starliner spacecraft, designed to take up to 7 astronauts to orbit, was to have its first launch with a crew aboard on May 6, but that was canceled due to a valve problem on the Atlas V rocket upper stage. Another launch attempt will occur no sooner than June 1. The capsule is reusable, though the attached service module is single use. The original plan was to have this first crewed launch in 2015, but numerous delays have arisen.

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	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 instruction manual			
<p>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.</p>				

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

For Sale	contact	James Greer	jamesgreer237@gmail.com	
•	DWARF II smart telescope (deluxe) with case, tripod (small)			\$ 250
	2 Batteries, charging cable, deep sky light pollution filter, 2 solar filters, memory card			
<p>See July 2024 Sky and Telescope for an excellent review. It will plate solve 1 mile from Ontario Airport and find Messier objects. iPhone and Android apps can control the scope (no eyepieces). A stunning introduction to astrophotography and only lacks image processing software.</p> <p>This item is pickup only – one mile from Ontario international Airport. Email me if you have any questions.</p>				

For Sale	contact	James Greer	jamesgreer237@gmail.com	
•	Vixen80Sf refractor extra low dispersion optics telescope with factory foam fitted metal case			\$ 600
	80 mm aperture, focal length 600 mm. Focuser has 2 inch tube with a 1.25 inch converter.			
	8 x 50 finder. Orion 1.25 inch Dielectric Mirror diagonal.			
•	Alt-Az mount with slow motion controls			
•	Cannon IS Binoculars			
•	Accessory case 1: 13 x 18 x 6 Orion case with pick & pluck foam. Contents: solar filter for this scope, flip diagonal, spectroscope that fits over an eyepiece, zoom eyepiece (8-24 mm), many filters. including skyglow, ultrablock, and 5 color filters.			
•	Accessory case 2 same size and type with same foam. Contents: 15 Plossl eyepieces, mix of Meade and Astrola and range from 4 mm to 40 mm.			
•	Bag: T adapter, Binoculars and spare parts.			
•	Also available are astronomy books. These include Burnhams manuals and books on urban astronomy. Everything is in good condition, especially the scope.			
<p>Price is for entire lot. These items are pickup only – one mile from Ontario international Airport. Email me if you have any questions.</p>				

Another Look – Ursa Minor

June 2024
Dave Phelps

The New moon in June is on Thursday, June 6 at 0538 PDT. The Full Moon is on Friday, June 21 at 1817 PDT.

June's Full Moon is the Strawberry Moon. Other native names are Berries Ripen Moon, Green Corn Moon, and Hot Moon. The Celts name the June full moon the Mead Moon, Horse Moon, Dyan Moon, and Rose Moon. Other names are Flower Moon and Planting Moon.

In French its Pleine Lune de Juin, In Italian Luna Piena di Giugno, In German Vollmond im Juni, In Greek Πανσέληνος Ιουνίου or more familiarly Pansélinos Iouníou.

On the morning of June 2, about 0300, the moon and Mars will be about 2^o apart.

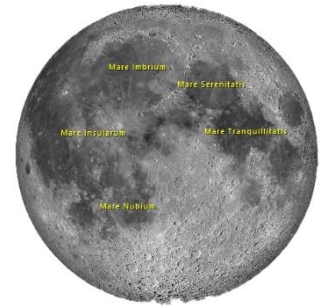
On Thursday, June 20 at 1349 PDT summer begins. In the northern hemisphere the sun reaches 23.5 degrees north, making this the summer solstice for us and the first day of winter for the southern hemisphere.

On the evening of June 16, there will be a close approach of the moon and Spica. An occultation will occur in and around Turkmenistan. On the evening of June 20, the moon will occult Antares, visible from the South Pacific. Most of the world will observe a close approach. There will be a conjunction of the moon and Saturn on June 27, rising at midnight and an occultation will be visible from the South Pacific. Rising shortly after midnight, there will be a close approach of the moon and Neptune. An occultation will be visible from South America.

Our little Bear is Orsa Monore in Italy, the Kleine Bar of Germany and the Petite Ourse of France, in Latin, of course, the Little Bear is Ursa Minor.

We need to spend time on the Little Bear and on Polaris, not in the context that we now think of them but what may be more likely 4000 and 5000 years ago, even before the Greeks; when the countries of the delta and the coastlines began their exploration and exploitation of the Middle Sea. A time when Greece was being settled by southward roaming tribes from Asia Minor and northward roaming tribes from Africa. Crete was being settled by tribes later known as Phoenician, Sicily is settled by tribes hopping across the Mediterranean and Cyprus by tribes hopping down from Turkey and across from Lebanon. 5000 years ago it wasn't even Thuban who was nearest the pole but Edasich, i Draconis, down by the dragon's bottom coil. What this means to those ancestors of ours is that there was a void around which the heavens spun, a void that moved too slowly to be measured in the lifetime of a human.

That void was what the caravans kept to their right as they went west and what the seamen kept on their bow as they went north up the coast or across the sea.



In *Hymn to the North Star* Bryant wrote:

Constellations come, and climb the heavens, and go.
Star of the Pole and thou dost see them set.
Alone in thy cold skies,
Thou keep'st thy old unmoving station yet,
Nor join'st the dances of that glittering train,
Nor dipp'st thy virgin orb in the blue western main.

On thy unaltering blaze
The half wrecked mariner, his compass lost,
Fixes his steady gaze,
And steers, undoubting, to the friendly coast
And they who stray in perilous wastes by night,
Are glad when thou dost shine to guide their footsteps right.

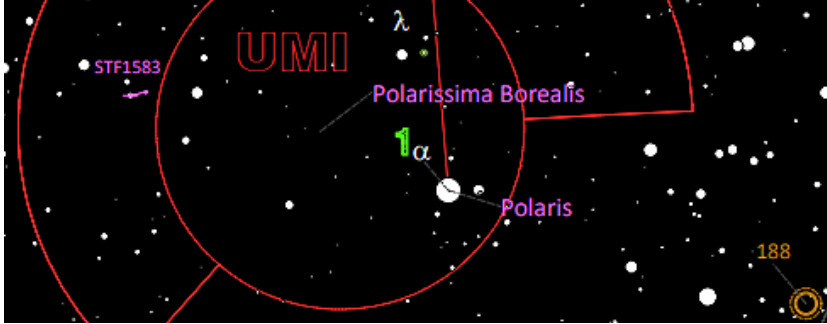
A beauteous type of that unchanging good,
That bright eternal beacon, by whose ray
The voyager of time should shape his heedful way.

The Euphratean and the Chaldean named the void An ta-aur-ra meaning The Upper Sphere or An-nas-sur-ra meaning High in Rising. They also used the word Unosara, later Kunosara, maybe because of different spellings or in different contexts. Kunosara derived into Kynosure, also meaning very high and maybe referring by then to Polaris. Today we have Cynosure, something that attracts and gives guidance. Singularly coincident with the foregoing Av-Koaoi-pa was the title that the distant Gaels gave to these stars, Drag-blod, the Fire Tail.

The early Greeks gave it the name Phoenice, after one of its cities or perhaps after the seafaring Phoenicians, or both, for the area, the little dipper asterism, and the pole star. In time it became Stella Polaris. Later in 19th century just Polaris. Its etymology is from the Latin Polaris, meaning heavenly, deriving, probably, from the Latin Polus, meaning end of an axle.

Polaris, α Ursa Minoris, (UMi) is a double star and a Cepheid variable. It is a beautiful sight in an 8 inch telescope under dark, desert skies. Polaris A is a bright 2nd mag and Polaris B is an easy 9th mag pinpoint next to it. One thing I really love about this star is its diamond ring of 7th mag stars. You also, will love it. Right there is Polarissima Borealis, N3172, the closest NGC to the north pole. Houston gives its magnitude as 13 and the NGC has it at 14. I glimpsed it with an 8" under those same dark desert skies, so you can too. Polarissima is very close to the pole and not easy to find. I adapted the chart below from Torres.

By the way, STF1583 is a double star from the catalog of Friedrich Georg Wilhelm von Struve. And (By the Way #2), 188 is NGC188 an open star cluster in Cepheus also known as Caldwell 1, less than 5° from the pole. While there, look for NGC's 2300 and 2276. They are also within a few degrees from the pole in the NE corner of Cepheus, just off the bottom of this chart.



<https://www.astrobin.com/full/5ozizr/0/>



Dominique Boutigny

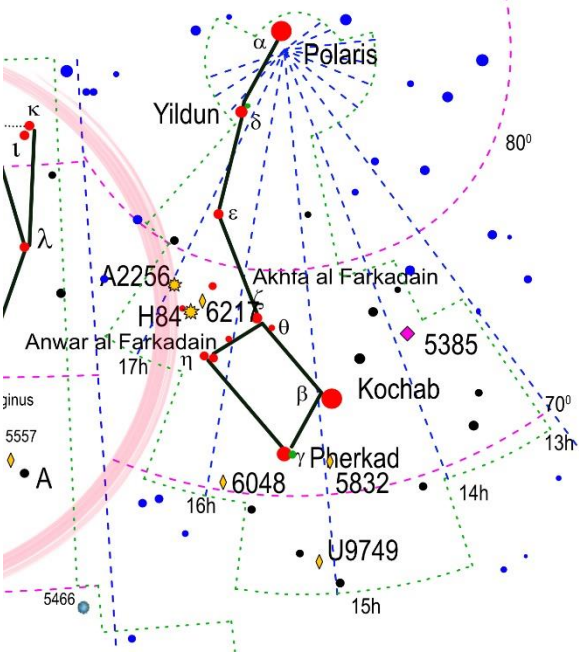
<https://www.astrobin.com/4jk8tu/?q=9749>

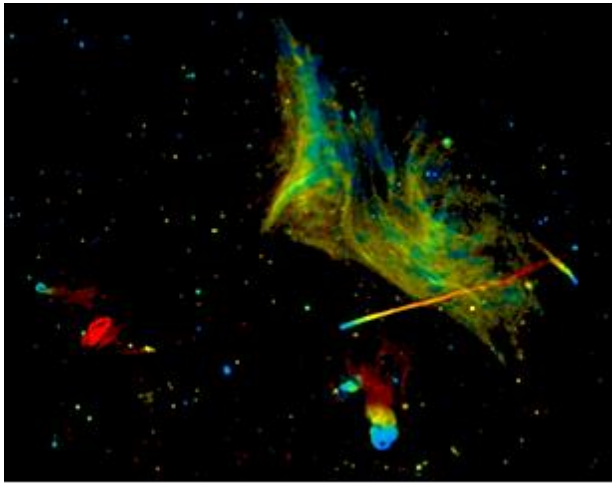
Ursa Minor has one named exoplanet. 8 UMi is a 7th magnitude red star named Baekhu. It was given the name by South Korea, naming it for Paektu Mountain, the tallest mountain in North Korea. Baekhu has an exoplanet. South Korea named it Halla, after Hallason, the tallest mountain in South Korea.

Kochab, β beta Ursae Minoris and Pherkad, γ gamma Ursae Minoris are the two "guardians of the pole", having been the nearest stars to the pole for around 2000 years from 1500BC to 500AD. Their names are derived from the Arabic. Kochab from the word for star and Pherkad of the words from the dimmer of the two calves.

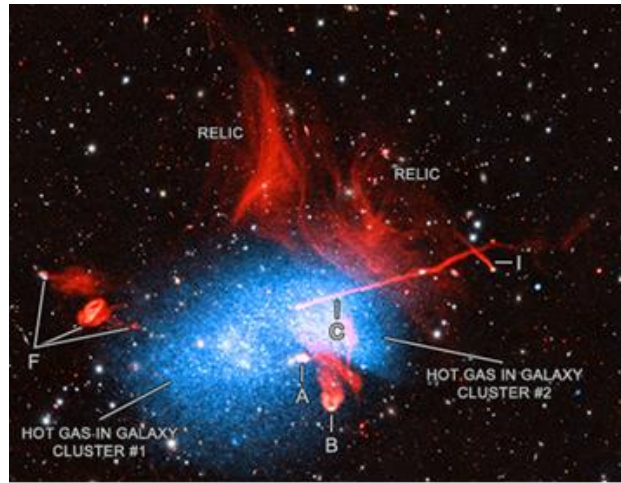
Yildun, δ delta Umi, is the middle star in the handle. Its name is derived from the Turkish for "star". ζ Zeta and η Eta Umi have the interesting names of Akhfa al Farkadain for Zeta and Anwar al Farkadain for Eta. These fascinating names come from the Arabic for brighter or dimmer of the two calves. The last star in the tail is Epsilon ϵ UMi, a triple star system

UGC 9749 is the Ursa Minor Dwarf, also known as PGC 54074. It's a really old one, and as you can see, sort of ovalish and diffuse. It's in the 11th magnitude so look for it and you'll find it.





<https://public.nrao.edu/gallery/abell-2256/>



<https://chandra.harvard.edu/photo/2023/a2256/>

Look just up from ζ and η and there are three deep space objects very close to each other. Abell 2256 is, like most Abells a pretty big cluster of galaxies. There is an added bonus, however, courtesy of the Chandra X-ray telescope. Compare it to the Cloudy Skys image and the NRAO, the National Radio Astronomy Observatory. They tell us we are looking at two lobes, meaning the merging (read collision) of two super-clusters. They also tell us that we are seeing synchrotron filaments in the Chandra image. And yes, that's a jet, starting and stopping we-know-not-where. It's apparently pretty old, if the curve near the center means anything.

<https://www.cloudynights.com/topic/445876-abell-2256-cluster-of-overlapping-galaxy-halos/>

In the same area of sky is Hickson 84, like all Hicksons, a smallish galaxy cluster and then there is 6217 a wowser of a face on spiral at 11th magnitude. The other two will be a little more challenging. The brightest central galaxy in A 2256 is N6331, you can make it out in the center of the image. Magnitude estimates are all over the place, but the French give us a 12.85. The Hickson galaxies are all less than 15, the image by Gary Imm on Astrobin counts six galaxies for us.



Down near the southern tip of Ursa Minor, near Kochab and Pherkad. Are a couple of galaxies of interest that you can find. N6048 is close enough to Pherkad that you can use him as a jump off point. 6048 is a small elliptical with quite a bright nucleus. It is listed at 12th magnitude.

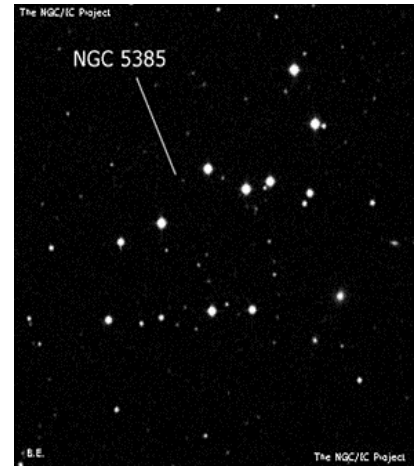
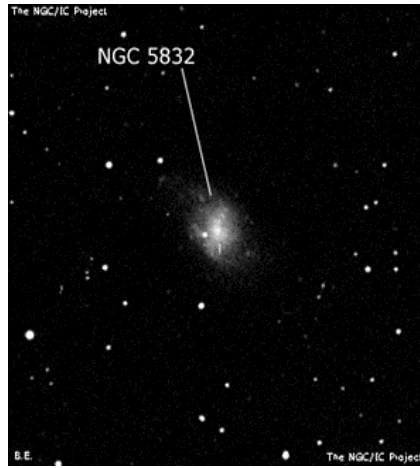


[https://www.astrobin.com/9e2mpo/?q=hickson 84](https://www.astrobin.com/9e2mpo/?q=hickson+84)

5832 is also near Pherkad. It is a little larger than 6048 but about the same magnitude. 5832 is a spiral so you may be able to get some definition. N5385 is a different thing altogether. It's an open cluster that probably isn't. There are about a dozen stars scattered about. Still, it's nice to look at.



[https://images.mantrapskies.com/search? designation=ngc+6217](https://images.mantrapskies.com/search?designation=ngc+6217)



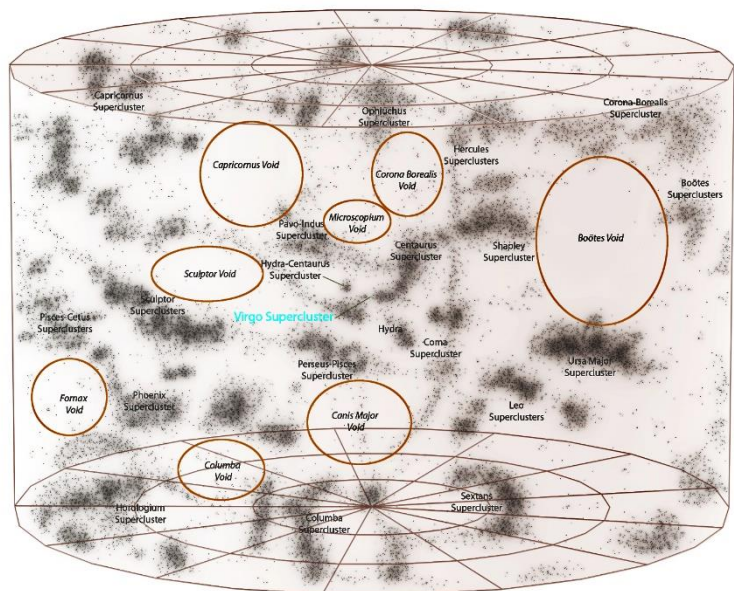
https://kosmoved.ru/get_ngcic.php?ID=NGC-6048&lang=eng

https://kosmoved.ru/get_ngcic.php?ID=NGC-5832&lang=eng

https://kosmoved.ru/get_ngcic.php?ID=NGC-5385&lang=eng

Crowding slightly into Ursa Minor is a large circular region roughly centered on Bootes called the Bootes Void. I bring it up because a significant area of UMi is in the void. Put simply, a void is a region of space with insignificant numbers of and types of galaxies. There are a number of voids in our observable universe. What I think we are looking at is the space between strings and filaments. It is possible that the aggregate gravity of surrounding giant superclusters is causing strings and filaments of galaxies and dark matter to form and then to suck a region of space between them clear of any other mass. Huh? In other words, a Void.

Dark Skys Dave



From the Editor

Due dates for submission of articles, pictures and advertisements

Issue	Due date
July	22 June
August	20 July
September	24 August

SIRIUS

www.ocastronomers.org



ASTRONOMER

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

President
Vice President
Treasurer
Secretary
Trustee
Trustee
Trustee
Trustee
Trustee
Trustee
Trustee

Barbara Toy
Reza AmirArjomand
Charlie Oostdyk
Alan Smallbone
David Searle
Mark Price
Doug Millar
Sam Saeed
Brett Nordby
Gary Schones
John Hoot

board@ocastronomers.org
btoy@cox.net
reza@ocastronomers.org
charlie@ocastronomers.org
alan@ocastronomers.org
dwsearle@gmail.com
mark@ocastronomers.org
doug@ocastronomers.org
sam@ocastronomers.org
brett@ocastronomers.org
gary378@pacbell.net
jhoot@ssccorp.com

COORDINATORS

Anza House Coordinator
Anza Site Maintenance
Beginner's Class
Orange County Star Parties
Explore the Stars
Librarian
Membership / Anza Pads
Observatory Custodian / Trainer / Member Liaison
Outreach
Sirius Astronomer Editor
Telescope Adoption Program
WAA Representative
Webmaster

Manuel Baeza
Don Lynn
David Pearson
Steve Mizera
Bob Nanz
Karen Schnable
Charlie Oostdyk
Barbara Toy

David Fischer
Jake Brown
Jon Montgomery
Reza AmirArjomand

manugb33@yahoo.com
dlynn@ieee.org
p.davidw@yahoo.com
mizeras@cox.net
bob@nanzscience.com
karen@schnabel.net
charlie@ocastronomers.org
btoy@cox.net
outreach@ocastronomers.org
newsletter@ocastronomers.org
scopes@ocastronomers.org
56scooter@gmail.com
webmaster@ocastronomers.org

SPECIAL INTEREST GROUPS (SIGs)

AstroImagers SIG
Astrophysics SIG
Dark Sky SIG
Youth SIG

Alan Smallbone
Mark Price
Barbara Toy
Doug Millar

alan@ocastronomers.org
mark@ocastronomers.org
btoy@cox.net
doug@ocastronomers.org