



NGC4565 presents its side towards us in the picture from Tom Bash. It was taken in June 2021 from Bear Valley Springs in the Tehachapi Mountains using Celestron HD11 scope and SBIG STXL-6303 camera.

### Upcoming Events - free and open to the public

<b>Beginner's class</b>	
<b>Club Meeting</b>	Friday, 16 February at 7:30 to 9:30 PM <b>IN PERSON</b> at Chapman University and <b>ONLINE</b> "What's Up?": Alex McConahay from RAS Main speaker: Cara Battersby from Univ Connecticut presenting: "The Wild West of Star Formation"
<b>Open Spiral Bar</b>	Saturday, 17 February at 10:00 to 11:30 PM <b>ONLINE</b> Want to socialize? Grab your images, experiences, questions, or none and see your fellow Orange County Astronomers face-to-face.
<b>Star Parties</b>	Saturday, 10 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

Welcome to the eternally short-changed month of February, having 29 days this year instead of its usual 28, this being a leap year in the Gregorian calendar. Other calendars have their own idiosyncrasies. It seems to me more rational to have February vacillate between 30 and 31 days, which could easily be done by transferring a day each from January and March, so the total number of days for that block of three months remains the same, but rationality doesn't really apply here.

I've been told that the Caesars each took one day from February to make their own months longer, so July and August have 31 days. I haven't found confirmation of that, but the calendar overall has gone through various adjustments over the centuries to get it to align better with our planet's orbit around the sun. Leap years were added in the Julian version of the calendar, but it had too many, so it got ahead of the year over time. The Gregorian reform dropped ten days and tuned the use of leap years (adjusting them by having some century years not leap). In all of these changes, though, it seems nobody thought about equalizing February – apparently giving it one extra day every leap year was considered enough.

Modern measurements of the length of the year are much more accurate than historic ones, thus every so often there are adjustments of a second or so as fine-tuning. I remember reading about the application of a leap second in Science News a few years ago and feeling rather underwhelmed. At my level, it wasn't noticeable, but apparently leap seconds cause difficulties in other realms. The most recent issue of Science News commented that the leap second is to be phased out by 2035, due to problems getting everything that relies on precise timing recalibrated after those changes, and future adjustments will be done at longer intervals, like 50 years. Even if leap years didn't solve all the calendar alignment issues, the additional day in February every four years is a reminder that astronomy can be relevant to everyday life.

## Website Pointer – Members Section

Over the time since we went to our current website, many people have asked about how they can get a password to access the Members section. We have had problems getting the database online in a way that will allow membership access like we had on the old website, but I am happy to report that we have found a workaround.

As you may have noted on the "Join OCA: OCA Membership" page of the website (which you can access through the drop-down menu under "About," which is visible at the top of most pages of the website), there is an option to join the club online, via PayPal. As an unexpected feature of this process, a new member who joins that way is automatically added to the website database as part of the process, and then can get access to the Members section of the website.

If you are an existing member, you can use that same process to renew your membership, even though the website doesn't say anything specifically about renewals. If you renew that way, Charlie Oostdyk (whose activities as Treasurer include keeping track of memberships) will recognize it as a renewal rather than a new membership, and the process will get you on the database for accessing the Members section. If you are a Life Member, you don't have renewals, but we are working on a way to add you manually.

Of course, with more people getting access to the Members section, we'll have to do something about updating it... I'm afraid we haven't been uploading Agendas and Minutes for Board meetings because few people had access, and I expect that will change. If there's something that any of you think should be included in the Members section that isn't there, please let us know.

## Update on the Kuhn

As you may recall, we changed the control system for the Kuhn telescope during the Covid period, and the new system has been working well. If you're a Star Member who was trained on the previous system, you need to be trained on the new system before you can reserve the Kuhn for your own use, but I don't expect you'll have any difficulties with it. Please contact me if you're interested in getting the training.

I'm also happy to report that we have several new Star Members, who I'm hoping to train soon as well. The Kuhn is a lot of fun to use, and it's great to see increasing interest in using it.

I'm hoping that this year we will be able to have the club observatory open more regularly for star parties, for members on site and their guests to view through. That's one long-standing tradition that we want to reestablish. Besides the pleasures of looking through the telescope, I've really missed the camaraderie of those nights in the observatory under the stars, as different people visited between their other activities. OK, I admit that viewing in cold weather isn't as fun as it was in times past, at least for me.

## Messier Marathon

The March star party is usually our Messier Marathon night, for those who undertake that challenge. That will be pretty early this year, on March 9, ten days before the Spring Equinox. For those who might not be familiar with this astronomical activity, it is at least theoretically possible to see all of the Messier objects in one night in the period around the equinox, and Messier Marathoners try to do just that. We should have forms you can use to track the objects you view on the club website (and similar forms are available on other websites, too). I mention all this now so you have some time to think about it and prepare – even a partial Messier Marathon can be a lot of fun.

May you all have clear skies and good viewing when and where you want them!

© Barbara Toy, January 2024

# AstroSpace Update

February 2024

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

**Galaxy Collision** – A very distant galaxy, known as HFLS3, with surprisingly energetic star formation (making new stars about 2000 times the rate that our Milky Way does) was imaged with the James Webb Space Telescope (JWST) and was found to be actually 6 galaxies colliding. It is known that collisions of galaxies can stir up bursts of star formation. Also, the fact that it is 6 galaxies helps explain the surprising size of what was at first thought to be one overly large galaxy. This collision of galaxies is so distant that its light left there only 850 million years after the Big Bang. HFLS3 has been imaged previously by the Hubble Space Telescope and ground-based telescopes, but these instruments did not have the resolution to distinguish the 6 separate galaxies. JWST spectra showed 6 separate revolving galaxies. Two of the 6 are seen through a gravitational lens formed by two foreground galaxies, confusing the picture.

**Multiply Imaged Supernova** – JWST observations spotted a Type Ia supernova in a very distant galaxy that is seen through a gravitational lens. A different supernova was seen in this same galaxy 7 years earlier. The gravitational lens caused multiple images of each supernova. Since the path length of the light of each of the multiple images differs, those images appear at different times. Astronomers are excited to observe this because the differences in timing can be used to calculate the expansion rate of the Universe, also known as the Hubble Constant. Scientists have calculated that the newer supernova will produce yet another image through the gravitational lens about the year 2035, so astronomers will be watching.

**M33 Young Stars** – JWST was used to study regions of newly-formed stars in the southern arm of the Triangulum Galaxy (M33). 793 newly formed stars were found. They were generally enveloped in gas and dust clouds, but infrared light to which JWST is sensitive penetrates dust well. At 2.7 million light-years away, that is the farthest that such stars have been individually studied. These young stars were found in numbers comparable to those found in similar regions of our Milky Way.



**Brown Dwarf Aurora** – JWST observed a brown dwarf (star-like object without enough mass to sustain hydrogen fusion that powers ordinary stars) known as W1935 and found that it possesses spectral emission lines from methane, unlike other brown dwarfs which have methane absorption lines. This means that the W1935 methane molecules are excited by some form of energy. The most likely explanation for this observation is that it is seeing aurora glow. Most auroras are caused by stellar wind striking an atmosphere, but there is no star to produce stellar wind anywhere near W1935. Theorists are working hard to come up with some other source of energy that could cause aurora.

**Beta Pictoris Tail** – The star Beta Pictoris has long been known to possess a pair of debris disks about it and two known planets, with possibly more planets in formational stages. JWST observed Beta Pictoris and found a feature not previously seen: a tail of material curling out from one of the debris disks, which has been described as a cat's tail. This tail glows in infrared, but not in visible light. Computer simulations that best match the production of the cat's tail show it likely was caused by a dust-producing event in one of the debris disks about 100 years ago. The amount of material in the tail is about equivalent to that in a large asteroid.

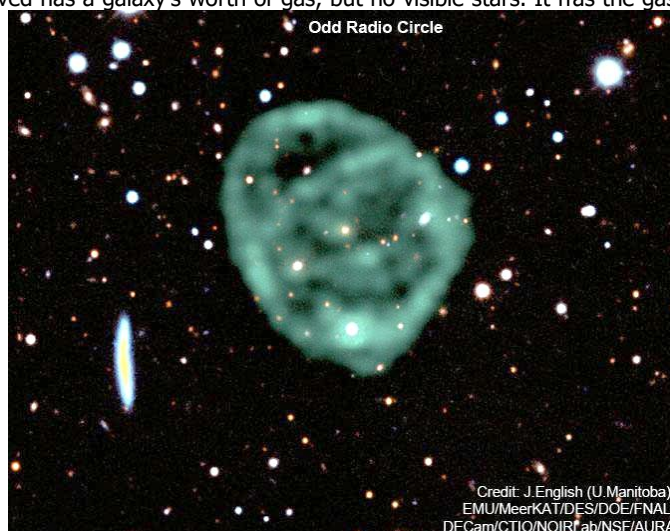
**Stars That Dim** – About 4 years ago the star Betelgeuse achieved fame when it dimmed substantially for many months. Many astronomers attributed this to dust blocking part of its light. Now astronomers have found in images of the star RW Cephei that it similarly dimmed for several months beginning in December 2022. The CHARA array of 6 telescopes, located on Mount Wilson, used as an interferometer was able to resolve the disk of RW Cephei and that showed dust blocking some of its light. Apparently, star-dimming history repeats itself. Astronomers suggest that supergiant and hypergiant stars, such as Betelgeuse and RW Cephei, throw out huge masses that cool into dust perhaps every century or so.

**Rippled Galaxy** – The most distant known spiral galaxy, known as BRI 1335-0417, has been observed with the ALMA radiotelescope array in Chile, which is sensitive to the gas in galaxies. The observation found ripples in the gas disk of the galaxy. The ripples must be caused by some external influence, but what that influence is has not been determined. Possibilities include infalling gas or a nearby pass of another galaxy. It is so distant that we are seeing it as it was more than 12 billion years ago when the radio light was emitted. This galaxy was forming stars hundreds of times faster than our Milky Way does. The ALMA observations also detected a central bar in the galaxy, making it the most distant known barred galaxy.

**Changing Exoplanet Atmosphere** – The Hubble Space Telescope (HST) reobserved the atmosphere of an exoplanet known as WASP-121 b and a new study compared observations to see if the atmosphere had changed over the years. It had. The planet orbits its star so closely that its upper atmosphere is heated to about 3400°F on the side that faces the star. This causes huge cyclones to form and dissipate. The chemical composition of the atmosphere was also found to change over time. WASP-121 b is about 880 light-years away, orbits its star every 1.27 Earth days, and is about the diameter of Jupiter.

**Starless Galaxy** – A team of radio astronomers observed about 350 low brightness (in visible light) galaxies because the hydrogen gas in them shows up well in radio light. One of the objects observed has a galaxy's worth of gas, but no visible stars. It has the gas mass and rotation of a normal spiral galaxy. It has no near neighbors, implying that star formation may be difficult without gravitational disturbances from neighbors. The object is dubbed J0613+52 and is 270 million light-years away. Such objects must be quite rare in order to have found only this one example. Longer observations in visible light are planned to see if there are any stars that have evaded detection by being extremely dim.

**ORCs** – In 2021 radio astronomers discovered 3 giant (larger than a full-sized galaxy) rings glowing in radio light. They were dubbed odd radio circles or ORCs. They were found to be the edges of spheres of gas blown out of galaxies. They are rare, though a few more have been found. The best theory of ORC origin is that a galaxy produced a huge wave of star formation, and then a few million years later many of these stars exploded as supernovas, and these explosions expelled a sphere of gas. New observations of one ORC showed that its central galaxy experienced a huge burst of star formation about a billion years ago.



**Unusual FRB Source** – Radio astronomers have been finding in recent years bursts of radio energy that last less than 2 seconds and have dubbed them fast radio bursts (FRBs). The sources of FRBs remain unknown, though magnetars (extremely magnetic neutron stars) are good candidates. HST was used to search the area of one FRB to learn more about its source and found only a collection of galaxies so distant that their light left there roughly 9 billion years ago. The collection contains as many as 7 galaxies, which may be close enough to be merging. From the apparent brightness and distance of the FRB, it had to be the most powerful one known. Most FRBs whose sources have been located have originated from isolated galaxies, not collections of galaxies. More observations of FRB sources are needed.

**Exoplanet Not Venus-Like** – The exoplanet TRAPPIST-1c is somewhat closer to its star than the habitable zone (where temperatures would allow liquid water), so some astronomers posited it might resemble Venus. A new study shows TRAPPIST-1c does not however have a thick carbon dioxide atmosphere like Venus, where it traps runaway temperatures. Computer simulations show that the more distant planets in the TRAPPIST-1 system (there is a total of 7 planets there) are more likely to have atmospheres, so astronomers will be looking for atmospheres on the other planets in the system. TRAPPIST-1c is about 41 light-years away and takes only 2.4 Earth days to orbit its dim red dwarf star.

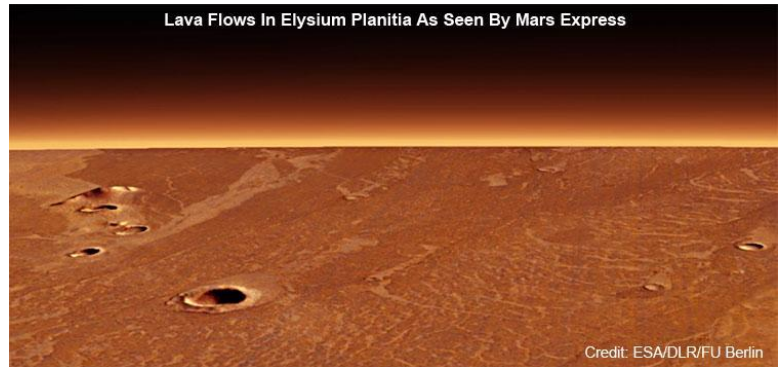
**No Atmosphere** – The exoplanet GJ367b is a rocky planet somewhat smaller than Earth orbiting a dim red dwarf star about 30 light-years away. It is close to its star, taking only 7.7 hours per orbit. This heats the planet to about 2700°F, so astronomers expected that any atmosphere would have been blasted away. New JWST observations found no atmosphere, confirming that expectation. Density calculations show the planet is likely mostly iron, so it is possible that the extreme heat not only blasted away any atmosphere but also much of the mantle layer of the planet. GJ367b and two other planets orbiting the same star were discovered in 2021 by the TESS planet-finding space telescope.

**Lava Planet** – Using data from the TESS planet-finding space telescope, astronomers have discovered a rocky planet about the size of Earth that orbits the star HD 63433, which is Sun-like G-type star. However, it does not resemble Earth as it is so close to its star that it takes only 4.2 Earth days per orbit, and its dayside temperature has been measured at 2294°F. That will melt rock, so the planet has a lava ocean. The planet is tidally locked to its star; that is, one side of the planet always faces the star. So only that side is likely melted rock. The planet and its star are about 400 million years old, which is fairly young compared to most known exoplanets. Because planets go through a molten phase during their formation, study of this lava planet may help astronomers understand planet formation.

**Neptune Is Greenish Blue** – It has been the practice of astronomy authorities to claim that Neptune is blue and Uranus is green. This is apparently based on images of those ice giants obtained by Voyager 2 when it flew by them in the 1980s. Doubting astronomers recently performed a careful color balance of the original Voyager Uranus and Neptune images and found both planets are greenish blue, close to the same color, though Neptune is a slight hint bluer. Apparently, the original release of Voyager images balanced the color of Neptune more bluish to emphasize cloud bands. This new study also showed that Uranus turns slightly greener at its solstices and slightly bluer at its equinoxes, as some astronomers had already claimed. The new study found the reasons for the seasonal color change are that the poles have somewhat different atmospheric chemistry and polar hazes form seasonally.

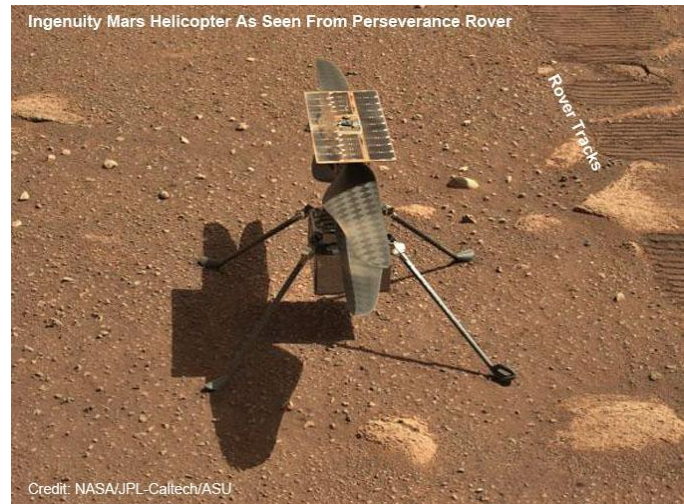
**Cyanide At Enceladus** – The Cassini spacecraft during its mission to Saturn, which ended in 2017, discovered and studied geyser-like plumes thrown off from the moon Enceladus, that escaped from its subsurface ocean through cracks in the icy shell. The plumes were found to contain water, carbon dioxide, ammonia, and methane. A new study of old Cassini data has identified evidence of hydrogen cyanide (HCN) in the plumes. It is known that reactions with HCN can produce amino acids, which are building blocks of life. The new study also found various oxidized compounds, implying that oxygen may be active in the subsurface ocean. These findings have encouraged some scientists to try to look for microbial life at Enceladus with future missions.

**Martian Volcanic Activity** – A new study using images, altimeter data and ground penetrating radar data has put together a picture of multiple massive lava flows in the Elysium Planitia area of Mars. Some of the flows are no more than a million years old. Some interacted with water floods. Some filled in existing channels or valleys. More than 40 volcanic events were in evidence, producing almost 1000 cubic miles of basalt. Because so much activity was so geologically recent, it is possible that there is still volcanic activity on Mars today.



**XRISM** – The Japanese space agency JAXA, in partnership with other space agencies, in September launched XRISM, a new X-ray space telescope with imaging and spectroscopic capabilities. The first XRISM images have been released, though full science operations will wait until later this year. The NASA Chandra and European XMM-Newton X-ray space telescopes are nearing their ends of life, and the planned replacement for them, ATHENA, will not be ready for launch until 2035. XRISM was designed to maintain astronomical coverage in X-rays until ATHENA is ready.

**Ingenuity** – The Mars helicopter Ingenuity has completed 70 flights. Not bad for a craft designed to make 5 flights in the thin atmosphere of Mars. Its longest flight so far was 2310 feet, total distance flown 10.5 miles, highest altitude 79 feet, and top speed 22 miles per hour. The original plan was just to prove flight on Mars is possible, but Ingenuity has now become a valuable scout and additional imager for the Perseverance Mars rover. NASA is now working on a helicopter to fly on Saturn's moon Titan.



**Asteroid Sample** – In September last year the OSIRIS-REx spacecraft returned a sample taken from the surface of asteroid Bennu. The sample collection system was taken to a sealed lab in Houston to disassemble the sampling mechanism and remove and preserve the asteroid material. Disassembly required removal of 35 fasteners, but within about a month two of the fasteners were found to be frozen in place. It took engineers about three months to design, build and test new tools, made of materials that would not contaminate the asteroid samples, but would apply enough force to the fasteners to remove them. The effort succeeded. Lab staff have now disassembled the sampling mechanism and are removing the remaining asteroid samples (about 2.5 ounces of sample had already been removed without disassembly).

**SLIM** – JAXA soft landed the SLIM (standing for Smart Lander for Investigating Moon) spacecraft at Shioli Crater on the Moon, becoming the 5<sup>th</sup> country ever to achieve this. Immediately before touchdown, SLIM tossed 2 tiny rovers, designated LEV-1 and LEV-2 onto the surface. All 3 craft worked as designed with the exception of a failure of the solar panels on SLIM, limiting its life to as long as the storage batteries onboard lasted. LEV-2 is nearly the size of a softball, and splits into 2 independent hemispherical wheels. It was designed by the Takara Tomy toy company, which makes Transformer toys. Images of the SLIM landing were planned using a rover camera. SLIM itself was designed to land at a preplanned location with much better precision than previous landers. It accomplished this using maps of the landing location, radar, laser altimeter and imaging data feeding into its landing computer in real time. It also was able to land on a considerable slope, using 5 landing legs. It has imaging, spectral, radiation and magnetic instruments.

**Peregrine** – NASA has a program called Commercial Lunar Payload Services (CLPS) where they contract with companies to design and develop spacecraft to send instruments to the Moon to determine conditions there in preparation for landing astronauts there with the Artemis program. For CLPS the Astrobotic company developed the Peregrine, a Moon lander with 20 scientific instruments. Astrobotic bought a ride to space on the first ever flight of the Vulcan rocket, which was developed by United Launch Alliance (ULA) to replace the Atlas V rocket and better compete with SpaceX's Falcon rockets. The Vulcan worked perfectly, Peregrine did not. It developed a fuel leak and was unable to reach the Moon. If successful, it would have been the first commercial (not government space agency) spacecraft to soft land on the Moon. Other CLPS spacecraft are on their way.

**Artemis Delay** – NASA announced that the Artemis II mission, in which astronauts will orbit the Moon, has been postponed until September 2025. Similarly, Artemis III, in which astronauts will land on the Moon, has been postponed until September 2026. The reason is to correct problems found during the Artemis I mission and development delays of the craft that will land and take off from the Moon, and of lunar space suits. Artemis IV, which will also land on the Moon, but using the lunar orbiting Gateway, is still on track for 2028.

# Another Look - Taurus

February 2024  
Dave Phelps



*"The Ram, the Bull, the Heavenly Twins,  
And next the Crab the Lion shines,  
The Virgin and the Scales.  
The Scorpion, Archer, and He Goat,  
The Man that holds the watering-pot,  
And Fish with glittering scales."  
Isaac Watts*

Saturday the 10<sup>th</sup> @ 0301 is February's New moon.  
February's Full moon will be on Saturday the 24<sup>th</sup> @ 0530. It will be a "Micro" Full moon.  
Traditionally, February's full moon is called the Full Snow moon. Having lived 20 years in North Carolina on the Blue Ridge Mountains, I can attest to that fact.

Native American names for the February moon are Bald Eagle moon, Bear moon, Bony moon, Eagle moon, Hungry moon and Groundhog moon. In French Pleine Lune de Fevrier, in German, Vollmond im Februar, in Italian, Luna Piena di Febbraio and in Greek, Πανσέληνος Φεβρουαρίου, Panselinos Fevrouariou.

Taurus is old. Known as Le Taureau in France, il Toro in Italy, and is the der Stier of Germany. Seemingly worldwide, via ancient Zodiacs preserved for us, Taurus is one of the earliest and most noted constellations, perhaps the first or one of the first few established, because it marked the vernal equinox from about 4000 to 1700 BC. It was called the "Bull of Light" in Babylon. We believe Taurus was identified with Marduk, their chief god, and called the "Spring Sun". About 15,000 years ago the bull, the Pleiades, the Hyades and the belt of Orion were painted on a cave wall in Lausaux, France.

Egypt also has Apis, the Bull, In a tomb in Thebes, then the capital of the Lower Kingdom. Twelve constellations have hieroglyphics assigned to them. The Pleiades was named Atauria, becoming our Latin Taurus and German Thier. As a zodiacal sign, the bull marked the beginning of the year, spreading from Akkadia and Babylon through Persia, Chaldea, India and Egypt, along with their zodiacs. Even lingering down the centuries to Mithras, the main deity of the Roman legions.

The Persian and Jewish scholars historically named the zodiacal constellations by giving them letters, such as A, B, C etc. Taurus was A, the first sign of the zodiac as it was in the Kabbalah. Prior to the Roman conquest, the Druids of what we now know as the British Isles and Ireland, worshiped the Bull during their Tauric festival, when the sun entered the constellation, coming down to us today as Mayday and in Scotland the rising of the Bull marking Candlemas.

Among the ancient Chinese, Taurus was known as "the White Tiger"; later it was called "the Golden Ox." Strangely enough we find that native South Americans in the Amazon called this star group "the Ox." In South Africa they are known as the hoeing stars. All this history shows us proof that for centuries throughout prehistory, there was transmigration, or a means of communication between the land masses.

*Sweet Europa's mantle blew unclasp'd,  
From off her shoulder backward borne,  
From one hand droop'd a crocus, one hand grasp'd  
The mild Bull's golden horn*

Europa was the daughter of Agenor and a Princess of Phoenicia. Jupiter is/was not a nice guy. The Greeks seemed to endow all their baser instincts into the deities allowing them to be bloodthirsty and ribald, thus excusing themselves of any faults. Jupiter turned himself into a white bull and insinuated himself into Agenor's herd. It seemed Jupiter the bull was so beautiful that Europa could not resist adorning him with garlands of flowers and then climbing onto his back. Jupiter immediately carried her away, swimming to Crete where she bore him three sons: Minos of Crete, Rhadamanthys of the Cyclades and Sarpedon of Lycia. Though never making it any further west than Crete, somehow, she gave her name to an entire continent.

*The strand he gained and forward he sped like a dolphin, faring with unwetted hooves over  
the wide waves, and the sea as he came grew smooth, and the sea monsters gamboled  
around before the feet of Jupiter, and the dolphin rejoiced and rising from the deeps he  
trembled on the swell of the sea. The Nereids arose out of the salt waters and all of them  
came on in orderly array, riding on the backs of sea beasts.*

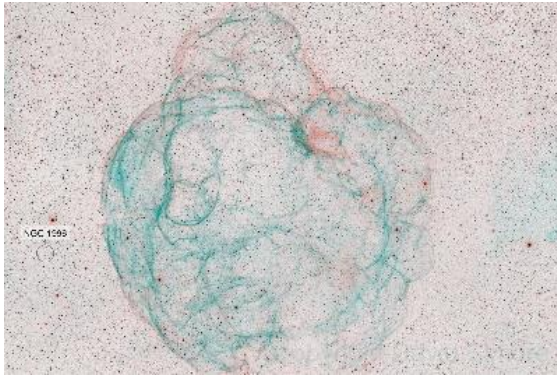
Moschus



As a nascent astronomer, I had a tendency to overlook Taurus somewhat. Between the globulars of Auriga and the Trapezium in Orion, two open star clusters and a crab were dealt with in short order. As I began to learn more, however, I came to realize that Taurus had little to offer the visual astronomer except for two open star clusters and a crab.

But we live and learn. Burnham lists over 120 multiple star systems and variables, Houston raves about a planetary and I learned about a molecular cloud rivaling M42. Taurus has over 80 systems with exoplanets, some with multiple satellites. There are 5 Collinder open clusters, 11 open clusters total, 5 galaxies 14<sup>th</sup> magnitude and brighter and 17! named stars.

You won't see too much of the Taurus molecular cloud visually except for two areas of nebulosity associated with dark nebula. IC 2087 and IC 2088. What you will see is a star-scape strewn with diamonds.



Taurus Molecular Cloud from Vladislav Khryakov

<https://www.flickr.com/search/?text=taurus%20molecular%20cloud>

Another object that will be very difficult to observe is Simeis 147, a supernova remnant almost 3<sup>0</sup> in size. If your mirror is large enough, you may be able to glimpse it unaided, but an H $\alpha$  filter will give you your best chance. Look for it up by  $\beta$ , Elanath, straddling the line between Taurus and Auriga.

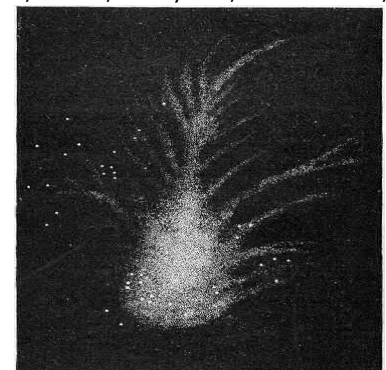
Up near the border with Perseus is a planetary nebula noteworthy for creating a sea-change in astronomical thinking. NGC 1514 is the Snowball Nebula. 1514 is 2 or 3 arc. min. in dimension, about half the apparent size of Tycho crater on the moon. At 9<sup>th</sup> magnitude you will see the central star easily though results vary on how easy it is to see the planetary shell. Back in 1790 William Herschel wrote:

*A most singular phenomenon! A star of about 8<sup>th</sup> magnitude with a faint luminous atmosphere of circular form, and about 3 minutes in diameter. The star is in the centre, and the atmosphere is so faint and delicate and equal throughout that there can be no surmise of its consisting of stars; nor can there be a doubt of the evident connection between the atmosphere and the star.*

There is one Caldwell object in Taurus, C41 is the Hyades. Then we have 5 Collinder Open Clusters; Cr's 50, the Hyades, Cr 54 - N1647, 57 - N1746, 60 - N1817 and 65. They are all easy binocular objects, the dimmest being Cr 60 at 8<sup>th</sup> magnitude. Less than an open cluster, N1746 is considered an asterism.

Near the  $\delta$ 's and  $\epsilon$  is Hind's Variable Nebula. Hind's is illuminated by T Tauri, a variable star shining from 9<sup>th</sup> to 11<sup>th</sup> magnitude over a 27 year period. As a result, the nebula will also brighten and fade over the same period. Then, of course, there is the Sasquatch (Crab) Nebula. He is easy to find, not too far from  $\zeta$  zeta, given name Tianguan. M1 is 2<sup>0</sup> to the NE, a middle Telrad circle. Be reminded that it doesn't look like the photographs, but you can still see a lot using your eye. You'll love it.

Taurus has 17 stars with proper names. In the Hyades there is Aldebaran, Theta  $\theta$  Tauri is named Chamukuy, In the mythology of the Maya peoples, Chamukuy is a small bird in the Yucatec Maya language. E  $\epsilon$  tauri marks one of the vertices of the Hyades triangle. It has the name Ain, derived from Arabic. John Flamsteed named the star Oculus Boreus, Latin for northern eye. Then there is Prima Hyadum and Secunda Hyadum, meaning the first and second of the Hyades. Prima marks the nose and Secunda marks the multiple star system  $\delta$  delta, two stars surrounded by many smaller ones, halfway between the nose and the ear,  $\epsilon$  epsilon.



Crab nebula (M1) drawn by Lord Rosse 1848

Other stars to point out in the Hyades are the small bi-color group the theta  $\theta$ 's. Also look for close doubles kappa  $\kappa$  and mu  $\mu$ . Hoggar is  $\tau$  tau, halfway to Elnath,  $\beta$  beta. The tip of the other horn is  $\zeta$  zeta, Tianguan.

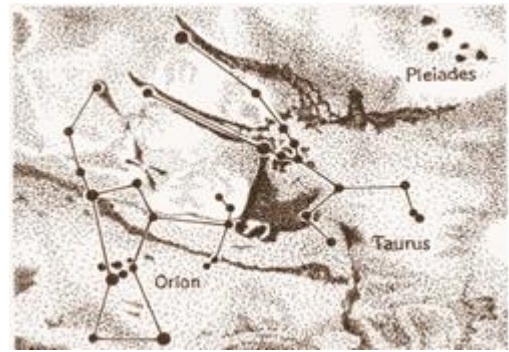
*In lustrous dignity aloft see Alpha Tauri shine,  
The splendid zone he decorates attests the Power divine:  
For mark around what glitt'ring orbs attract the wandering eye,  
You'll soon confess no other star has such attendants nigh.  
-- Serviss*

In one of the stories the Hyades and the Pleiades are sisters of Atlas and Pleione. They had a brother named Hyas who died while hunting. This so saddened the sisters that they wept, thus bringing annual storms.

The Pleiades are ancient, much older than the usual Greek myths and older than Homer. Their name, however, does come from the Greek word **pleein**, meaning "to sail", clearly referencing that at their setting, stormy winter is passing and spring is nigh.

My most memorable view of the Pleiades was through a pair of 25 x100 binoculars set up on the upper telescope field at RTMC. I remember coming back again and again just to reset the image and look once more. The star field was covered in mist and the stars bright and hard. Each time I looked I had to catch my breath.

The Pleiades are proof of how important the stars are historically. The 15,000 year old image from Lausaux cave in France shows a bull under the 7 (or is it 8?) stars of the Pleiades. I believe he also painted the Hyades on its head. An imaginative interpretation can find even more figures hidden in the paint.



The name by which the Pleiades are known among the Polynesians is the "Tau". Tau marks a season, and as with the Egyptians, the Pleiades delineates a time of celebration and feasting. Perhaps this is another piece of data that points to cultural mingling going back thousands of years.

It has always been written that we can see only six Pleiades though tribal memory recalls seven. The seven are the daughters of Atlas, or the Atlantides, whose names were Merope, Alcyone, Celaeno Electra, Taygeta, Asterope, and Mala. Per Hyginus, the seventh star in the group dimmed towards the end of the second millennium BCE.

Their names have been thus recorded by Aratus in Phaenomena —  
*These seven names they bear Alcyone and Merope, Celaeno, Taygeta, and Sterope, Electra,  
And queenly Maia, small alike and faint,  
But by the will of Jove illustrious all at morn and evening,  
He makes them mark Summer and Winter harvesting and seed time*

Hesiod, who wrote about 200 B C., shows how they were observed in his time as signs for the seasons.  
*When, Atlas-born, the Pleiad stars  
Before the sun above the dawning skies,  
Tis time to reap, and when they sink below  
The moon-illummed west, 'tis time to sow*

And, of course, per Lydia Sigourney,  
*Make friendship with the stars.  
Go forth at night,  
And talk with Aldebaran, where he flames  
In the cold forehead of the wintry sky.  
"The Stars"*

When the Pleiades were photographed in 1888 by Paul and Prosper Henry, it was found that the seven stars were veiled in nebulous folds clinging to and filling the spaces between with filmy mist and wreaths of stellar gauze. Thus was Tennyson's picturesque description written in the well-known lines —

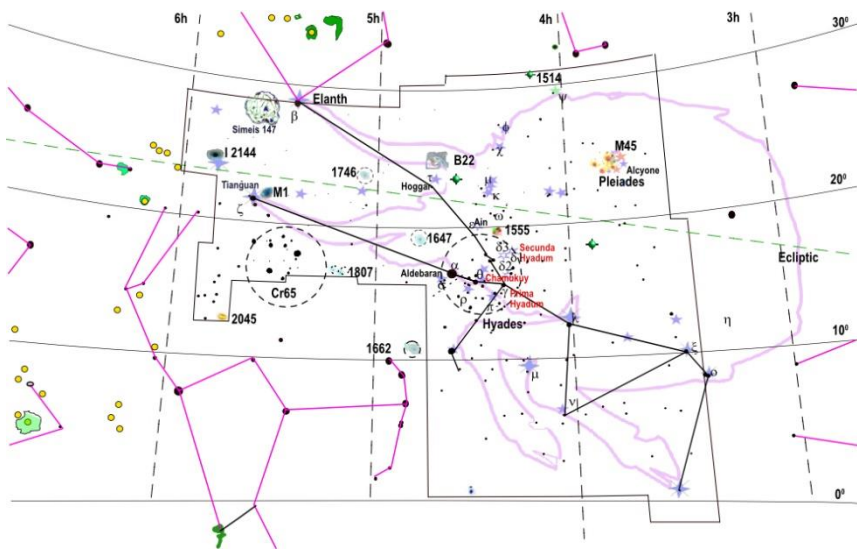
*Many a night from yonder ivied casement, ere I went to rest,  
Did I look on great Orion sloping slowly to the West.  
Many a night I saw the Pleiads, rising thro' the mellow shade,  
Glitter like a swarm of fire-flies tangled in a silver braid.*



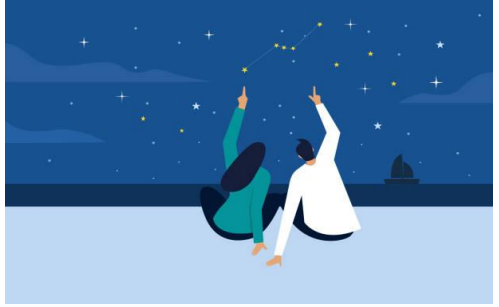


As picturesque as Tennyson writes of Locksley Hall there is a bit of a problem. Charles Messier lived 87 years, passing in 1817. He was a comet hunter and compiled a list of fuzzy objects not to be confused with comets. Messier's telescopes would have had difficulty resolving M45 into stars. Maybe what he saw was a misty ball with specs of stars shining. Tennyson wrote Locksley Hall in 1888, when he was 79 years old, 3 years before he died. Rather than the "Pleiads" looking through "yonder ivied casement", what he actually saw is a beautiful example of poetic license.

By the way, the Maia nebula bears the NGC number 1432 and vdB 21, the Merope nebula is 1435 and vdB 22. Electra is vdB 20 and Alcyone is surrounded by van der Berge vdB 23. You can find the van der Berge catalog at [https://www.emilivanov.com/CCD Images/Catalog\\_VdB.htm](https://www.emilivanov.com/CCD Images/Catalog_VdB.htm).



So, you tell me, isn't Taurus the month to take your sweetie out to look through your telescope at "a swarm of fireflies tangled in a silver braid."?



Dark Skies Dave

## From the Editor

Due dates for submission of articles, pictures and advertisements

<b>Issue</b>	<b>Due date</b>
March	17 February
April	23 March
May	20 April
June	25 May

# Advertisements

Buy, Sell or Trade some of your gear? This is where club members can place advertisements. Please contact the editor at [newsletter@castronomers.org](mailto:newsletter@castronomers.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.

For Sale	contact	Ron Choi	rchoi1983@gmail.com	
• Orion StarShoot AutoGuider			further reduced price	\$ 200
• Tele Vue 8mm plossl 1.25" eyepiece				\$ 80
•				

For Sale	contact	Val Akins	akins7821@gmail.com	949-301-5956
• Telescope: Orion's Sirius 8" Go-To Reflector, Focal Length: F6, 1200 mm, Case: for 8 x 6 OTA				\$ 450 reduced
Mount: Sirius EQ-G Go-To Equatorial with tripod				
Controller: Synscan 42,000 Celestial object database				
Lens: Siriusplossl 26 mm				
Viewfinder: 8 x 50 mm Rt. Angle				
Note: Equipment is used, but all functional				

For Sale	contact	David W. Pearson	p.davidw@yahoo.com	
• Star Splitter 20 inch Dobsonian telescope with servo-cat go-to capability				\$ 6000 obo
Includes 8 eyepieces, laser collimator, telerad, plus more.				
The equivalent bought today from Obsessiont would be \$15,385+shipping without extra accessories.				
• Intes MK66 6" f/12 Maksutov-Cassegrain OTA includes rings/dovetail, case, finderscope, and diagonal				\$ 600 obo
These items are local pickup only. If interested, please send me email requesting a complete description.				

For Sale	contact	Bill Frank	949-254-4662 cell	
• LX200 Maksutov-Cassegrain telescope with cover, Meade mount, base controller,				\$ 500 OBO
power and control cables, carrying cases.				
• Accessories in case #1: Meade Dew Shield MFR#07284, main scope cap, guide scope caps, 2 green laser sights with controller				
• Accessories in case #2: Televue eyepieces: 19mm Wide Field, 74 mm Plossl, 10.5 mm Plossl, Meade Super 26 mm Plossl, setup eyepiece, assorted locking rings and covers, adapter sleeve, power supply 10 (PS2E), ES pulley upgrade (ESP), wind restraint system, anti-sag brace, 2 Starlite red reading lights, lens cleaning brush, laminated list of Messier objects and bright stars				
• Camera: SBIG ST-5C with CPU, P/S, cables				
• Software: CCDOPS Version 4.0, SkyX Professional Edition User Guide				
Photos are available here: <a href="https://tinyurl.com/h3e6hxcn">https://tinyurl.com/h3e6hxcn</a> . Please call me to arrange inspection / pickup / delivery.				

For Sale	contact	Roger Mills	909-627-4122	
• 8 inch pyrex mirror plank ground and polished to f/7 with polishing tool and materials				\$ 200 obo
• Fiberglass telescope tube 9.25 inch O.D., tube rings, equatorial mount, synchronous drive, counterweight, Book: "Making Your Own Telescope" by Allyn J. Thompson.				
The mirror has not yet been figured to parabolic shape				

For Sale	contact	Nick McMillan	wforacer@rocketmail.com	
• Technical Innovations Pro-Dome Ten-Foot (PD10), includes three Wall-Ring-PD10 (WR10) which add ~48" height to the walls and making it 10' tall and 10" wide.				\$ 5000
• Digital Dome Works controller (DDW), hardware and software.				
• Electric Dome Motors 10 (ED10), Electric Shutter Motor 10 (ES10), Shutter Auto Stop (SS1).				
• Power Supply 10 (PS2E), ES Pulley upgrade (ESP), Wind Restraint System, Anti Sag Brace.				
Pictures are on Flickr here: <a href="https://www.flickr.com/photos/123906448@N08/albums/72177720309596327/">https://www.flickr.com/photos/123906448@N08/albums/72177720309596327/</a> . The dome and components must be picked up in Costa Mesa.				

For Sale	contact	Barry Acton	714-603-2182 cell	
•		Meade LX200R GPS & Tripod (with original box). New is priced around \$5,500		\$ 2000
•		Meade Zero Image-Shift Electronic Micro-Focuser		
•		Meade AutoStar II Hand Controller, manual		
•		Eyeiece Meade Meade 26mm Plossl 5 Element 1 1/4"		
•		1.25" 90° Mirror Star		
•		Other accessories that came with the telescope...		
•		Meade SF #1200 10" Solar Filter		\$ 50

I am the original owner, and it has been for about 15 hours. It is in extremely good condition as it has sat inside the house when not in use. Everything is in perfect condition.

For Sale	contact	Kandra Kargo	<a href="mailto:teapotsagit@earthlink.net">teapotsagit@earthlink.net</a>	714-349-9137 cell
•		Total Solar Eclipse Flag is back! Take one with you to Texas (or Mexico) next April 2024!		\$ 45 + S&H
		Limited supply from Teapot Sagittarius. American made. Call or text for more information and to order.		



For Sale	contact	Jerry Floyd	jlfloyd720@gmail.com	
•		Celestron CG-11 scope (Losmandy G-11 Equatorial Mount with Celestron C-11 Telescope)		\$1000
		No tripod		
		High-precision brass worm (purchased as upgrade from Losmandy), Gemini-1 control unit including motors, Counterweights, Finder-scope, Telrad finder, dew shield for telescope		

Originally purchased as a single assembly in 1996; little used in the past few years but in good shape  
 Can demo if interested, but you would have to come to my observatory at the OCA Anza site  
 These items are for local delivery in Southern California only. If interested, contact me for further information.

For Sale	contact	Richard Brennan	562-480-7215 cell	dickbrennan101@yahoo.com
•		Losmandy D-series dovetail rail and adjustable rings.		\$160
		DM8 + DR100 with 2 radius blocks. r mounts and rings for same.		
•		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		\$175
		10" dia. x 1/8" (Jim's Mobile).		
•		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.		\$60
		The Windows XT computer is what is missing. SBIG hasn't supported this cooled camera for many years.		

## Help Wanted (Volunteering Opportunities)

- Communications Coordinator doing social media presence and announcements to members.
- Outreach coordinator, assistant coordinator, volunteer at outreach events

**SIRIUS**  
www.ocastronomers.org



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