



IO - June 2023

Eugene Astronomical Society, PO Box 591, Lowell, OR 97452

www.eugeneastro.org

Annual Club Dues \$25

President: Andrew Edelen 618-457-3331

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Additional Board members:

Dan Beacham, Ken Martin, Robert Asumendi.

EAS is a proud member of The Astronomical League



Next Meeting Thursday, June 15th, 7:00 p.m.

Observing Basics, Part 1

by Andy Edelen and Jerry Olton

Our June meeting will start with Kathy Olton doing the month's "What's Up?" presentation, followed by Andy Edelen and Jerry Olton presenting the first of several talks on the basic concepts of observing. At this meeting Andy will talk about angular measurement (how far objects are from one another) and magnitudes (how bright they are). Jerry will talk about magnification (how big something looks) and field of view (how much of it you can see). These four concepts determine what you can view, a quantity that changes depending on the optics you use.

Subsequent talks at future meetings will be presented by other speakers (perhaps you?) and will cover concepts such as resolution (how much detail you can see), image orientation (different for different optics), star-hopping from known objects to new targets, go-to technology that eliminates star-hopping, what accessories should be in an observer's tool kit, and more.

These talks will be open to questions and comments, making them more of an open discussion than a presentation. Come to our June meeting and join in the conversation.

Welcome New Members

We have one new member this month: Dena Drake from Veneta. Welcome to the club, Dena!

Next First Quarter Friday: June 23rd

Our May 26th star party was a great success. We had 7 or 8 telescopes and about 40 visitors. There was a skating derby in progress when we arrived to set up, but they were winding down as we were winding up so it worked out okay. Several of the skaters stuck around for a look at the Moon and planets. The sky stayed clear until about midnight, when we were pretty much done for the night anyway.

Our next star party will be June 23rd. First Quarter Fridays are laid-back opportunities to do some observing and promote astronomy at the same time. Mark your calendar and bring your scope to the College Hill Reservoir (24th and Lawrence in Eugene) and share the view with whoever shows up. Here's the schedule for the remainder of 2023. Star parties start at dusk or 6:00, whichever is later. (9:15 on 6/23.)

June 23 (Moon 30% lit)

September 22 (Moon 53% lit)

December 22 (Moon 84% lit)

July 28 (Moon 82% lit)

October 20 (Moon 38% lit)

Dark Sky Star Party at Dexter State Park: July 15

August 25 (Moon 68% lit)

November 17 (Moon 24% lit)

May Meeting Report

What's Up

by Jerry Oltion

Interstellar Wayfarers and Life in Our Galaxy

by Mel Bartels

Our May 18th meeting was held on Zoom, since Mel now lives in Sisters. We had a lively meeting all the same, with a couple dozen attendees and lots of discussion before and after the presentations.

Jerry led off with this month's "What's Up?" talk. He showed the old-school analog way of determining what constellations are visible at any given time on any given night: a planisphere. You set the time and date and the oval window reveals the sky for that moment. You can see what's setting in the west, what's rising in the east, what's straight overhead, etc. After demonstrating how the planisphere worked, Jerry showed a dozen or so objects that are high in the sky this month. Since spring is galaxy season, most of the objects were galaxies, including two with supernovae in them: NGC 4995 and NGC 4568. (This was before we learned about the one in M101, or there would have been three.) Jerry ended with a preview of what's coming: A plethora of globular clusters which Kathy Oltion will describe in greater detail in her "What's Up?" talk next month.

After Jerry's talk, Mel gave the night's main presentation on "Interstellar Wayfarers and Life in Our Galaxy." He started by talking about the two known interstellar objects to visit our solar system: the mysterious object named Oumuamua that came through in late 2017 and Comet Borisov that came through in 2019. Borisov seemed to be a fairly normal comet, just one that would only make one pass through the solar system, whereas Oumuamua was a solid object that some people thought might be an alien spacecraft. The overwhelming scientific opinion is that it's not, but it does beg the question of how many technological artifacts do pass through our solar system and what we would do if we were to unequivocally identify one.

From there Mel went on to talk about finding evidence of extraterrestrial life on the other planets in our solar system and on exoplanets orbiting other stars. With only Earth to examine so far, we don't yet know how common life might be in the universe, nor how diverse it might be. It's possible that life could originate wherever conditions are right, or it's possible that it arose only once and spread outward from that source ("panspermia"). It's even possible that a civilization could intentionally send out tailored organisms to introduce life to other planets. We need more data to even make an intelligent guess.

Mel then talked about a different type of life altogether: Artificial intelligence. Computer programmers seem to be on the cusp of developing software that can pass the Turing test (becoming indistinguishable from a real human in a conversation). At the moment these "AI" programs are just using correlations in vast amounts of data to determine their responses to human inquiries, but a true breakthrough seems likely in the near future. Mel demonstrated this by having an AI write a 200-word science fiction story in the style of Jerry Oltion, which he read aloud to the group and asked if anyone could guess who wrote it. Jerry said it sounded as if it were written by Lionel Fanthorpe, a writer in the 1960s who was reputed to have swallowed a thesaurus. Nobody else ventured a guess, but after Mel revealed the story's provenance a few people agreed that the style was similar to Jerry's. And to be honest, the story wasn't half bad. It wasn't particularly good, though, which was the point Mel was getting at. Our current crop of AI programs can synthesize very well, but they can't yet create. It probably won't be long, though, before they can. What will that mean for the presence of life in the universe? Will there suddenly be two forms of it, both from Earth? How many more might there be out there?

We had a lively discussion after Mel's talk, talking about the Fermi paradox (Where is everyone?) and the implications of developing artificial intelligence here and elsewhere. The meeting lasted until well past 9:00, and everyone agreed it was very thought provoking and fun.

Speakers Needed

We need volunteers to do more “What’s Up” presentations and main-event presentations in upcoming months. Please consider doing one! The idea is to give everyone a chance to contribute to the meetings and get us all used to speaking to the group, with the hope that more of us will feel comfortable contributing to the club. So please give it some thought. Previous speakers will be happy to help you out. Contact Amy, Andy, or Jerry to get on the schedule.

Solar Sundays Start Up Again

May 14th dawned clear and warm, perfect for our first Solar Sunday since January. Dan Beacham and Jerry Olton took their telescopes to Alton Baker park and showed an appreciative group of visitors the sights. The Sun was in good form with several nice prominences, sunspots, filaments, and granulation.

Jerry set up a regular scope and aimed it at Venus, a sight that surprised many people who didn’t realize they could see a planet by day. They were even more surprised to realize they could see it by naked eye if they looked in just the right spot.

Jerry also had his usual sundials on hand, plus a stack of star party schedule cards that dwindled over the course of the two-hour observing session. There was a flurry of sign-ups on our email list that evening, presumably from people who learned about us at the park.

Solar Sundays are held sporadically on sunny Sundays when both Dan and Jerry are available, or when others with solar scopes volunteer to host the event. Watch our email list, Facebook page, and website for scheduling.



Photo © by Amy Baker

Dan Beacham adjusts his solar scope.



Photo © by Amy Baker

Jerry Olton shows people his sundials.

Venus the Next Four Weeks: A Once in an Eight-Year Opportunity.

by Mel Bartels

If you look each night, you'll see Venus as an evening star. Right now, Venus is about as high and bright as it will be, reaching its greatest elongation on June 4th and maximum brightness on July 7th. If you are watching through a telescope, something wonderful happens on June 4th: Venus appears as a half crescent; its crescent rapidly shrinking as it sinks lower in the evening sky each night, eventually disappearing Aug 1st.

With good skies, you will see Venus in the evening sky for 263 nights in a row. Then Venus disappears for 50 days, reappearing in the morning sky for 263 mornings. Venus will disappear once again for 8 days. This total: $263+50+263+8$ is a total of 584 days. We call this cycle the *synodic period of Venus*, synodic from Greek meaning conjunction, originally assembly or meeting.

Now, if you are marking calendars and paying attention to Venus over the years, you'll notice something that you can also calculate. The synodic period of Venus multiplied by five is 2920 days. But 2920 days divided by eight is 365, the days in Earth's year. 2920 divided by 365 is 8. Every eight years Venus appears in the sky at the same location at the same time. Kind of amazing: something to take note of.

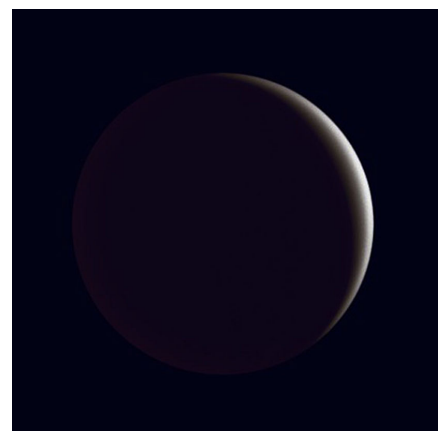
The Mayan and Aztec certainly did. The Mayans created a sophisticated calendar featuring Venus. They even scheduled battles based on Venus's synodic period. The Mayan went to great lengths to "bring all celestial and human activities into relationship with the sacred almanac by multiplying the span they were interested in until that figure was a multiple of 260." They used 52 days for the intervening periods of invisibility.

This period of five is often shown as a five pointed star. Intriguingly, as we draw the five pointed star, crisscrossing our lines, so does Venus's inferior conjunctions in the sky jump back and forth. Once associated with beauty, the pentagram was used by Da Vinci in his drawings of the human form, was used to represent the five wounds of Christ, and eventually became associated with the Devil. I guess no good story goes unpunished. And by the way, the pentagram contains the 'golden ratio.'

Shifting to the era of telescopes, we have a rare opportunity as Venus becomes more 'crescent' in the evening sky to look for the Ashen Light of Venus, a truly subtle glow on Venus's dark side. This object that a scant few have seen is not confirmed scientifically. But a few observations by experienced amateurs have convinced some that it is real. There exist many more negative observations, leading most, truth be told, to believe it is make-believe. The bias, "seeing is believing," is strong with us. Illusionary, nonexistent or maybe not, look for it when the Moon is not interfering. Early July looks best.

What might the Ashen Light be, if it exists? Scientific speculation centers on variations in lower level clouds, Venusian volcanic activity, and fierce atmospheric winds that transport broken down oxygen molecules to the dark side where they recombine, glowing feebly, emitting the green light of molecular oxygen à la aurora.

It is suggested to try filters: red and green are common recommendations. You don't need a big scope. Can you confirm the Ashen Light? Or will your observation be an equally worthwhile 'negative?' Either way, we can marvel at the Venus calendar, the Venus pentagram, and wonder what our descendants will make of our observations.



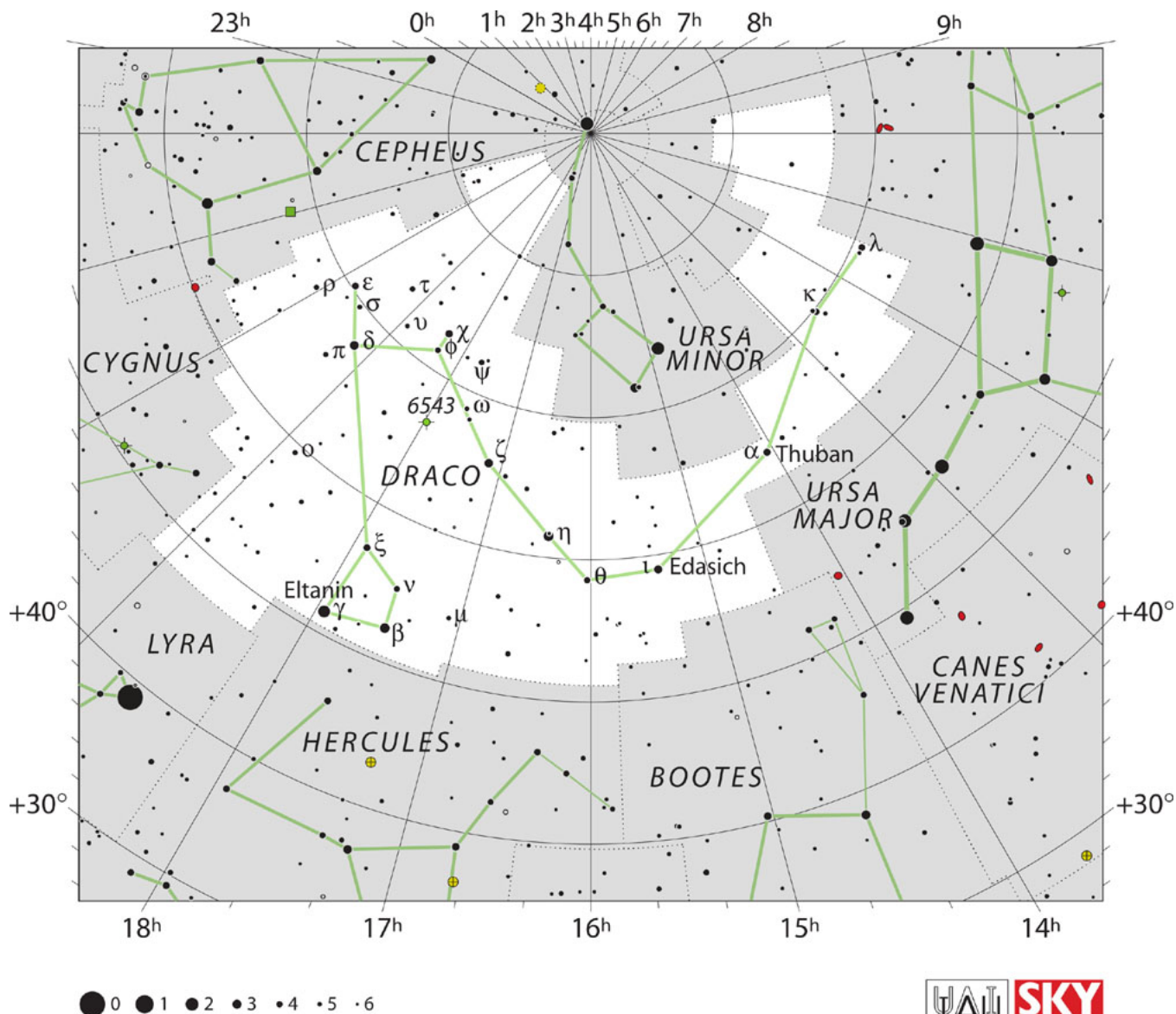
Venus's ashen light,
greatly exaggerated.

Constellation of the Month: Draco

by Andy Edelen

Winding its way among the more-familiar constellations of the circumpolar north, **Draco the Dragon** encompasses nearly 1100 degrees of sky, ranking 8th among the 88 constellations. It's often easier to define the constellation's shape as "What doesn't belong to any of the more-familiar constellations around it" (see also: Aquarius), but the stars of the Dragon are actually fairly easy to trace with practice and moderately-dark skies. Draco contains one (possible) Messier object, a top-five planetary nebula, a number of fine double stars, and an impressive variety of fine galaxies, so it's well worth finding your way along the constellation's serpentine form.

Draco's historical roots are actually found in ancient Babylon, but the most-enduring "western" myth involving the constellation describes a battle between the Titans and their successors, the Olympian gods. After many years of war between the two sides, Athena found herself under attack by the Dragon, one of the remaining Titans. Athena flung the Dragon into the heavens, where it attempted to right itself and ended



Draco, as seen on modern star charts. Courtesy Sky & Telescope and IAU.

up tying itself in knots. As it landed near the North Pole of the sky, it froze in place, the North Pole of course being a place of extreme cold.

Another Greek myth associated with Draco is that of the dragon Ladon, who guarded the Golden Apples of the Hesperides. These apples were the object of Hercules' eleventh Labor, and in order to steal them, Hercules had to kill Ladon. Hercules, of course, succeeded in doing so; in honor of Ladon's service in guarding the Hesperides' gardens, Hera placed the faithful Dragon in the sky near the pole, where he could always be seen and honored by mortals, and could continue to keep watch over the mortal world.

In classical Arabic lore, the Dragon was instead a nomadic camp (Nu, Tau, and Sigma Draconis), the nomads' herd of camels (Beta, Gamma, Upsilon, and Xi Draconis), and a pack of hyenas (Eta and Zeta Draconis) attempting to devour one of the baby camels.

Draco's Alpha star, Thuban (Arabic: *thuban*, "large snake or python") is of particular significance; It was the Pole Star from c. 3900-1800 BC, during the Old Kingdom era of ancient Egypt. Thuban was closest to the Pole — only 10' away! — in 2830, during the 4th Dynasty, when the Pyramids were built. This fact was key in understanding the construction of the Great Pyramid of Giza, as the orientation of the Great Pyramid seems to have based upon its alignment with Thuban. Due to the precession of the equinoxes, Thuban will once again become the northern Pole star...in 20,346 AD. To the Dakota/Lakota Sioux, Thuban and its neighboring stars in Draco and Ursa Minor formed the great Thunderbird, *Wakingyang*.

British conspiracy lunatic David Icke believes that Thuban is the home star of a race of shapeshifting reptilians who live among us and plot the destruction of humanity by disguising themselves as rich and powerful human beings and Illuminati figures or some damn thing. AREN'T YOU AFRAID??

Our naked-eye challenge for this month is simply to trace the meandering coils of the Dragon around the Celestial Pole, in and among the stars of the two Dippers. It might be easiest to start with the Dragon's head, an irregular trapezoid of stars consisting of Beta, Gamma, Nu2, and Xi Draconis, which lies near the first-magnitude star Vega. This trapezoid is in itself a common asterism known as The Lozenge (after the original meaning of the word, for a rhombus or diamond shape).

If our objects this month are challenges for the apertures for which they've been chosen, perhaps none is more so than **NGC 6543**, the Cat's Eye Nebula, our binocular target for this month. The Cat's Eye measures just over 0.25' in diameter, making it just non-stellar in binoculars—the giveaway is the nebula's blue-green color, which is visible with almost any optical aid. The nebula shines with the equivalent light of a 9th-magnitude star, so it appears quite bright even in binoculars; in his excellent book *Touring the Universe Through Binoculars*, Phil Harrington notes that the nebula's central star — the dying ember of the nebula's progenitor star — may be visible in larger-aperture binoculars. This is one of the northern sky's five best planetary nebulae, so don't miss it!

Find the Cat's Eye about 40% of the way from Zeta to Delta Draconis and a slight bit south of that line.

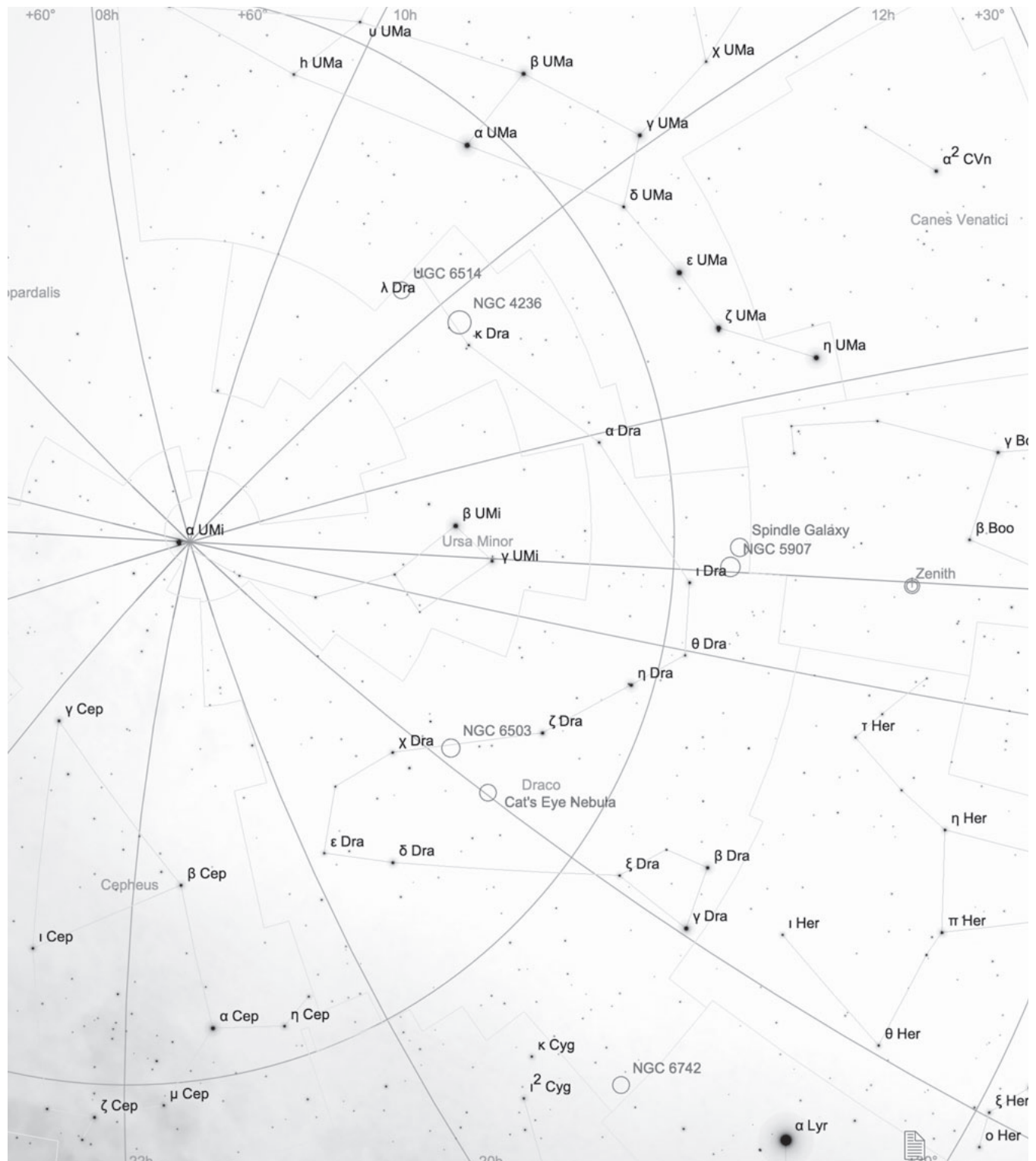
Lying less than 4 degrees north of NGC 6543 is one of Draco's most-overlooked gems, the fine, highly-inclined spiral galaxy **NGC 6503**. Spanning 3' x 0.75', and with a high surface brightness, this galaxy is an easy target for a 6-inch telescope. Users of scopes in this class will likely note a brighter core region to the galaxy, and that the galaxy's halo is fainter on the eastern side; there's also a 9th-magnitude star off the eastern side that distracts an observer's eye from the galaxy's glow.

NGC 6503 lies about a third of the way from Chi Dra to Zeta Dra; the Cat's Eye lies an equal distance south of the galaxy.

The Cat's Eye isn't the only planetary in Draco. The brightest of the others is **NGC 6742**, also known as Abell 50. "Brightest" is somewhat ironically used here, as this planetary is certainly a challenge for a 10-inch scope; it's a 0.5' disk of uniformly-faint light, without central star or distinguishing feature to be found in less-than-large apertures. (Users of large telescopes may note the presence of a threshold-level star on the nebula's eastern edge.)

NGC 6742 lies 1/3 of the way from Kappa Cygni (the star at the tip of Cygnus' northern "wing") and

0-magnitude Vega, brightest star in the Summer Triangle and the constellation Lyra. A nebula filter — either Ultra High Contrast (narrowband, UHC) or O-III — will be immensely helpful in tracking down this planetary, which otherwise lies ignored in the eastern-most corner of the Dragon.



This month's highlighted challenge objects, depicted at 11 PM on June 15th. The Big Dipper lies at top near center, and is upside-down; Polaris (the North Star) at left center where the right-ascension lines converge (it's labeled "Alpha UMi"). Note that the label placement is imperfect: the label for NGC 5907 belongs to the lower of the two circles by Iota Dra; "Spindle Galaxy" is NGC 5866 (although several galaxies have this nickname); and the circle for Hickson 55/UGC 6514 lies underneath the label for Lambda Dra. Chart adapted from *Sky Safari 5 Pro*.

As in Hydra, Draco contains an object that is considered one of Messier's mistakes. Historical consensus was that M102 was simply a repeat observation of M101, but this has been disputed in recent years; the actual discoverer of M102, Messier's colleague Pierre Méchain, said that he'd simply made a mistake and catalogued M101 twice. In the current era of astronomical detective work, however, evidence leans strongly toward the identity of M102 as being the bright Draco galaxy **NGC 5866**.

Regardless of its association with M101, NGC 5866 is a fine object in and of itself, and is our target for 2-inch telescopes this month. It's a lenticular (lens-shaped) galaxy, found about 40 million light-years away. Lenticular galaxies are mid-way between spirals and ellipticals, having a spiral galaxy's disk but not the familiar spiral arms (lenticular are classified as S0, S for "spiral"). In smaller scopes, the galaxy yields little detail beyond its bright glow, which is elongated roughly 3:1; in larger scopes, a semi-stellar nucleus and (in good conditions) the galaxy's razor-thin dust lane can be discerned. Those with dark skies may be able to spot NGC 5866 in binoculars.

To find NGC 5866, search just over a third of the way from Iota Dra to Theta Boötis (the eastern-most star in Boötes' "pipe"); the galaxy is just east of that line.

NGC 5866 is the dominant galaxy in the NGC 5866 Group, a small cluster of galaxies that includes the stunning edge-on galaxy **NGC 5907**; this galaxy is our object for 4-inch telescopes this June. NGC 5907 is a member of that sub-class of spiral galaxies known as "flat" galaxies, edge-on spirals with a length-width ratio of at least 7:1. (See the CotM in the November '22 *IO* for more information about flat galaxies and their astrophysical importance.)

Kepple & Sanner's *Night Sky Observer's Guide* notes that NGC 5907 is a faint 7' x 0.5' streak of light in a 4- to 6-inch telescope, oriented NNW-SSE. It's one of the most spectacular edge-on galaxies for amateur optics, ranking perhaps only after NGC 4565 in Coma Berenices and NGC 891 in Andromeda in the Northern Hemisphere. Larger telescopes will of course show greater detail, but you don't need heavy-weight optics to appreciate this superb object. To find it, look 1.5 degrees east-northeast of NGC 5866; a 15' arc of three 8th-magnitude stars west of the galaxy points up to it.

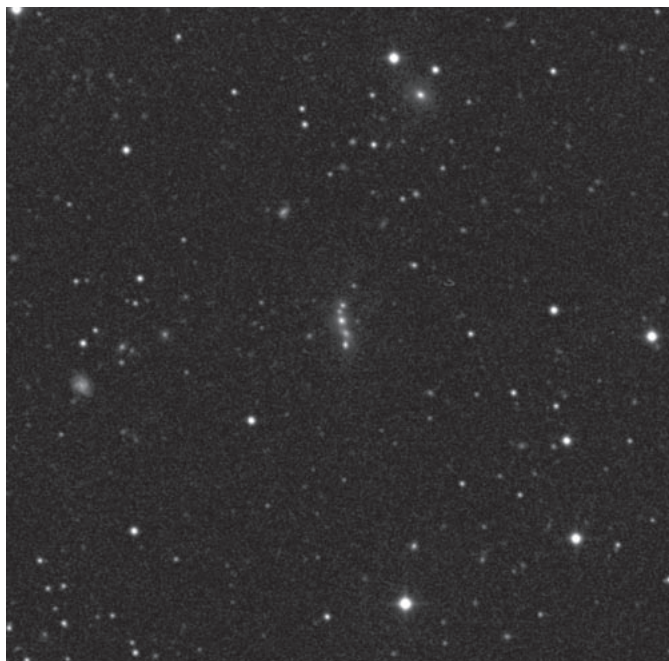
We've mentioned before in these pages that the listed magnitude of an astronomical object can be deceiving; many extended objects have "bright" magnitudes yet are devilishly difficult to see because that magnitude is spread out over a large area. Case in point: **NGC 4236**, our target for 8-inch telescopes this month. The galaxy boasts a magnitude of 9.6, but is so large — 9' x 1.5' in an 8-inch scope, but 17' x 4' in a 12-inch — that its surface brightness is a remarkably-low 15th magnitude. This is even more surprising given that the galaxy is a relatively-nearby 14 million light-years; you'd expect it to be brighter due to its proximity. Part of the galaxy's dimness is due to its fairly low luminosity — it just isn't that rich in stars. Nonetheless, NGC 4236 can be seen with smaller telescopes under dark skies, such as those at EAS's Oxbow observing site. It's important, though, to observe the galaxy when it's near the meridian — in June, this is difficult — and away from the dome of light created by the Eugene/Springfield conurbation.

NGC 4236 can be found about a quarter of the way from Kappa to Lambda Dra and just a little bit south of this line. These two stars lie just above the bowl of the Big Dipper. You'll need patience and a low-power or wide-angle eyepiece to extract the galaxy from the background sky. (Rocking your telescope very slightly back and forth when you think you've acquired the galaxy will help you see it.) Once you've found it, see if you can detect any irregularity or "mottling" to the galaxy's feeble glow.

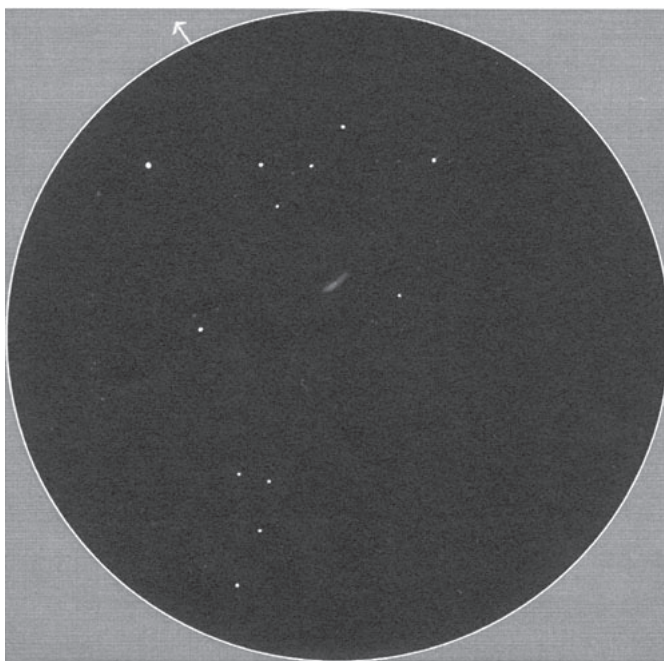
Draco has plenty of galaxies to challenge even the largest-aperture scopes, but our target for such scopes this month isn't a single galaxy; it's a quintet of galaxies in an almost-straight, compact line. **Hickson 55** is one of the most-difficult of the 100 Hickson Compact Groups of galaxies to split into its individual components, although a 12-inch (maybe even a 10-inch) will just reveal the group's collective glow.

My first encounter with HCG 55 occurred at the Brothers Star Party in 2017; this defunct event was held on a dry pasture just west of the town of Brothers, OR, under spectacularly-dark skies. Using EAS's 18" scope, I was able to spot the group as a 1.2' long (x a hair's width) sliver of light. At 250x, I was able on

a couple of occasions to just separate out the most-northern of the quintet from the others, and to glean a few extra photons from the galaxy (UGC 6514) in the middle of the group. I should have used higher power, but was probably extra lazy that night.



Hickson 55. This compact galaxy group contains five galaxies in a 1.25' x 0.125' string, oriented roughly N-S. North is at top. The photograph covers 15' x 15'.



Hickson 55, sketched by the author at the 2017 Brothers Star Party with the 18" EAS Dobsonian at 178x. West (preceding) is roughly 11:00 (the direction of the arrow); north is roughly at 8:00.

Hickson 55 is located 1.5 degrees due north of Lambda Draconis. Give it all the magnification the seeing will allow to try to break it into its constituent galaxies; none of them is more than a few arcseconds across.

Dragons are known for jealously guarding their hoards, but this particular Dragon will share his with anyone curious enough to seek it out. June is a good month to check out the treasure that Draco otherwise keeps hidden — be sure to accept the Dragon's generosity, no matter what optics you bring along on your visit.

EAS T-Shirts



EAS has a new logo, and you can have it put on your very own T-shirt or sweatshirt. Coaches Athletic Supply, 3990 Roosevelt Blvd, Unit C (corner of Roosevelt and Bertelsen) has the logo on file. You can buy a shirt from them or provide your own and they'll print the logo on it for about \$5. The standard size for a T-shirt is about 7 inches, but Coaches can enlarge or reduce the size and price accordingly. The logo can be in a variety of colors depending on the color of your clothing item.

Providing your own shirt could save you some money. Michaels on Gateway sells good quality shirts for under \$5.

(Note that Baseball caps are currently not something Coaches can print on.)

Gallery

The sky cooperated pretty well in May, giving us several opportunities to go out observing and photographing the night sky. The spiral galaxy M101 gave us a treat: a brand new supernova (2023ixf) that grew steadily in brightness until it was visible in just about any telescope. Karmin Peterson supplied a photo of M101 taken before the supernova, then another on May 23, just 10 days after its discovery. It was already nearly as bright as the galaxy's core, and continues to brighten even now at the close of the month.



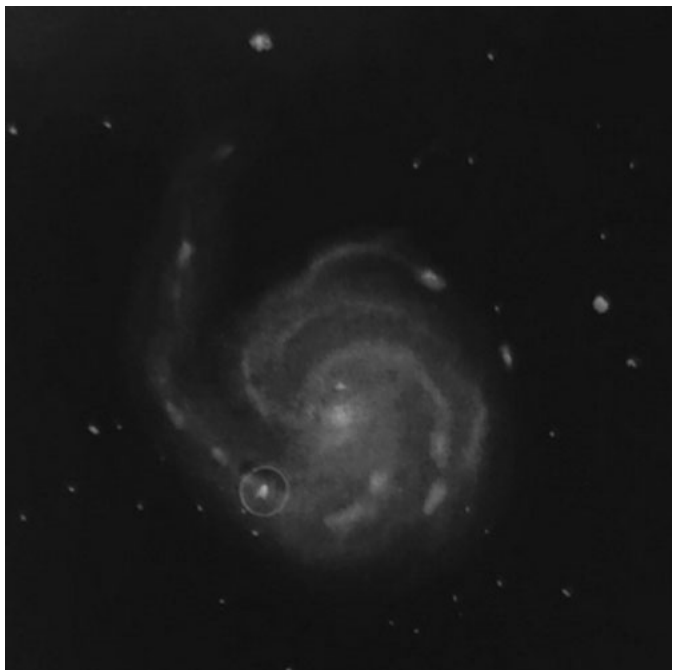
M101 before the supernova. Photo © by Karmin Peterson



Supernova 2023ixf in M101 10 days after discovery.
Photo © by Karmin Peterson.



Supernova 2023ixf on the night of our First Quarter Friday
star party (May 26th), taken at the star party.
Photo © by Mike McAdams.



Mel Bartels sketched M101 and the supernova as seen
through his 30" telescope on the night of May 21st.
Sketch © by Mel Bartels

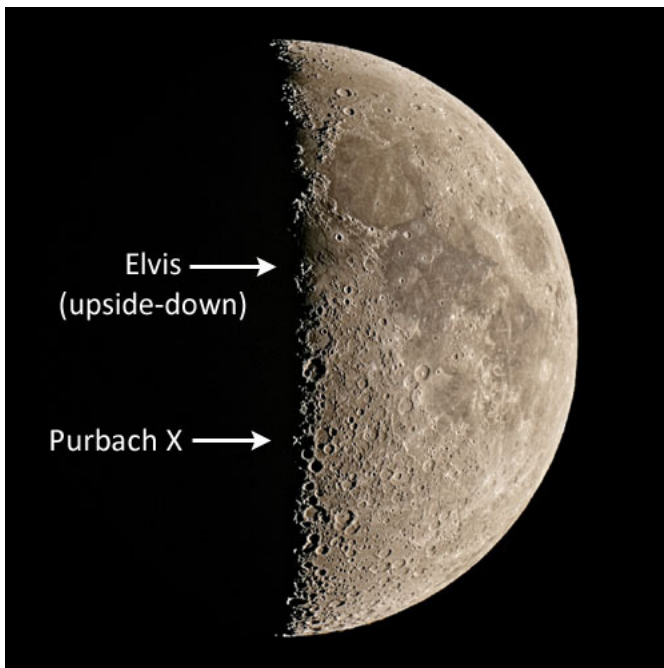
The Moon provided plenty of opportunity for viewing and imaging this month, too. Alan Gillespie caught its crescent phase in two different exposures on May 22nd, the same night it crept up on Venus (see next page). On the 26th, the night of our First Quarter Fridy star party, Alan caught both Elvis and the Purbach X, two ephemeral features only visible for a few hours each month, while Jerry zoomed in on Elvis.

We have several other excellent images on the following pages as well. Zoom in and enjoy!



Two views of the crescent Moon on May 22, one showing the sunlit side and the terminator and the other showing the dark side illuminated by Earthlight. The bright spot at the top is the crater Aristarchus.

Photos © by Alan Gillespie.



On the night of the first quarter, two phenomena become visible for just a few hours: the Purbach X and the shadowy rock 'n' roller we call Elvis.

Photo © by Alan Gillespie.



Lunar Elvis on the night of our First Quarter Friday star party, May 26th. Imagine him holding a guitar that's pointing off to the right, with his right arm crooked to strum the strings.

Photo © by Jerry Olton.



On May 22nd, the Moon and Venus were close together in Gemini. Kathy Oltion got this shot from the parking lot at her lab at about 10:30 that night. Note the Earthlight on the Moon. Photo © by Kathy Oltion



Robert Asumendi got Castor and Pollux and Mars as well (upper left) from his back yard. Photo © by Robert Asumendi.



The Sun has been quite active as it ramps up to its 2025 solar maximum. Alan Gillespie took this image of multiple sunspots on May 24th. Photo © by Alan Gillespie.



Mel Bartels sketched M104, the Sombrero Galaxy, and captured the extended IFN (Integrated Flux Nebula) stretching well beyond it. Sketch © by Mel Bartels.



Jim Pelley's photo of the Leo Triplet (M65, M66, and NGC 3628) captures the tidal tail on NGC 3628 and the extended arms of M66. Photo © by James Pelley.



Observing in June 2023



June 3, 8:42 PM	June 10, 12:31 PM	June 17, 9:37 PM	June 26, 12:50 AM
Mercury Rise: 4:34 AM	Mercury Rise: 4:30 AM	Mercury Rise: 4:36 AM	Mercury Rise: 5:04 AM
Venus Set: 00:10 AM	Venus Set: 23:59 PM	Venus Set: 23:46 PM	Venus Set: 23:25 PM
Mars Set: 00:34 AM	Mars Set: 00:17 AM	Mars Set: 23:58 PM	Mars Set: 23:36 PM
Jupiter Rise: 3:44 AM	Jupiter Rise: 3:20 AM	Jupiter Rise: 2:56 AM	Jupiter Rise: 2:25 AM
Saturn Rise: 1:41 AM	Saturn Rise: 1:14 AM	Saturn Rise: 00:47 AM	Saturn Rise: 00:11 AM
Uranus Rise: 4:23 AM	Uranus Rise: 3:57 AM	Uranus Rise: 3:30 AM	Uranus Rise: 2:56 AM
Neptune Rise: 2:24 AM	Neptune Rise: 1:56 AM	Neptune Rise: 1:29 AM	Neptune Rise: 00:54 AM
Pluto Rise: 00:10 AM	Pluto Rise: 23:38 PM	Pluto Rise: 23:10 PM	Pluto Rise: 22:34 PM

All times Pacific Daylight Time (March 12 – Nov 4, 2023 = UT -7 hours) or Pacific Standard Time (November 5, 2023 – March 9, 2024 = UT -8 hours)

Date	Moon Rise	Moon Set	Twilight Begin	Sun Rise	Sun Set	Twilight End
6/1/2023	18:27	03:53	0315	05:32	20:49	2307
6/2/2023	19:44	04:18	0314	05:32	20:49	2308
6/3/2023	21:02	04:51	0313	05:32	20:50	2310
6/4/2023	22:16	05:34	0311	05:31	20:51	2311
6/5/2023	23:20	06:30	0310	05:31	20:52	2312
6/6/2023		07:39	0309	05:30	20:52	2314
6/7/2023	00:10	08:58	0309	05:30	20:53	2315
6/8/2023	00:49	10:19	0308	05:30	20:54	2316
6/9/2023	01:20	11:39	0307	05:29	20:54	2317
6/10/2023	01:44	12:56	0306	05:29	20:55	2318
6/11/2023	02:06	14:10	0306	05:29	20:55	2319
6/12/2023	02:26	15:23	0305	05:29	20:56	2320
6/13/2023	02:46	16:35	0305	05:29	20:56	2321
6/14/2023	03:08	17:47	0304	05:29	20:57	2322
6/15/2023	03:34	18:59	0304	05:29	20:57	2322
6/16/2023	04:04	20:09	0304	05:29	20:58	2323
6/17/2023	04:42	21:12	0304	05:29	20:58	2323
6/18/2023	05:28	22:07	0303	05:29	20:58	2324
6/19/2023	06:23	22:53	0303	05:29	20:59	2324
6/20/2023	07:24	23:29	0304	05:29	20:59	2325
6/21/2023	08:28	23:58	0304	05:29	20:59	2325
6/22/2023	09:33		0304	05:30	20:59	2325
6/23/2023	10:38	00:22	0304	05:30	20:59	2325
6/24/2023	11:41	00:42	0305	05:30	20:59	2325
6/25/2023	12:44	01:00	0305	05:31	21:00	2325
6/26/2023	13:48	01:17	0306	05:31	21:00	2325
6/27/2023	14:55	01:35	0306	05:31	21:00	2324
6/28/2023	16:05	01:54	0307	05:32	21:00	2324
6/29/2023	17:19	02:17	0308	05:32	20:59	2323
6/30/2023	18:36	02:45	0309	05:33	20:59	2323

All times are for Eugene, Oregon Latitude 44° 3' Longitude 123° 06'

Items of Interest This Month

Summer is noctilucent cloud season. Look for bluish-white thin clouds low in the north well after sunset (long after regular clouds have gone dark).

6/1 Venus in line with Castor and Pollux. Mars in Beehive cluster.

6/2 Mars still in Beehive cluster.

6/4 Venus at greatest eastern elongation.

6/13 Venus less than 1° from Beehive cluster.

6/21 Summer solstice 7:58 AM.

6/21 Crescent Moon within 3° of Venus and 5° of Mars. Good chance to spot both Moon and Venus in full daylight. (Mars will probably be too dim to see by day.)

6/23 First Quarter Friday star party.

6/26 Charles Messier born in 1730.

6/30 Mars and Venus at their closest (3° 34').

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