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the Skyscraper

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AMATEUR ASTRONOMICAL SOCIETY OF RHODE ISLAND ⋆ 47 PEEPTOAD ROAD ⋆ NORTH SCITUATE, RHODE ISLAND 02857 ⋆ WWW.THESKYSCRAPERS.ORG

In This Issue:

Seagrave Memorial Observatory Open Nights
July 6, 13, 20, 27
@ 9pm

July is Member's Month at Skyscrapers

Saturday, July 6 @ 7:00pm EDT at Seagrave Memorial Observatory

In-person and on Zoom (Contact Linda Bergemann (lbergemann@aol.com) for the Zoom link.

6 PM: Socializing
7 PM: Business Meeting & Member Talks
8:30 PM: Telescope Set-up & Star Party

Member Talks

For our July 6th meeting, we will have 4 members give short 10–15-minute presentations about their astronomy experiences.

Bob Napier – Internet-Based Observatory Operation

Mark Munkacsy – T Corona Borealis

Ellsworth Starring – Observatory Construction

John Kocur – Aurora Report

Member Star Party

In addition, we invite members to bring their telescopes and/or binoculars for a good, old-fashioned star party (weather permitting, of course) to occur at the conclusion of the monthly meeting on the grounds of the observatory. Star parties are great for meeting other members, checking out other telescopes, and sharing this great hobby. If you do not have a telescope or are thinking of purchasing one, a star party is a great place to talk to telescope owners, ask questions, and take in some views from different types of scopes. We also plan to have some challenge objects to test your astronomy skills.

So join us in July for a member focused meeting on Saturday July 6th!

President's Message

by Linda Bergemann

My message is short this month: Join us on Saturday, July 6 for our member-focused monthly meeting followed by observing. Several members will speak about their home observatories and/or personal observing projects. Bring your telescope and setup to observe on the grounds, or observe through one of our many telescopes. See you there!

Warm wishes and clear skies.

New Member

Welcome to Skyscrapers

Michael Kerr
of Whitinsville, MA

Observing Events:

Open Nights at Seagrave*

July 6, 9-11 PM
July 13, 9-11 PM
July 20, 9-11 PM
July 27, 9-11 PM

Off-site Public Observing*

River Bend Farm, Uxbridge, MA Friday, July 12, 8:30 - 9:30 PM

*Members are welcome and appreciated at all of these events

Upcoming Presentations

August 10
Dr. Peter Schultz
Moon Ain't Dead Yet

September 7
Mario Motta
Design and Construction of a 32" Telescope

October 4-5
AstroAssembly

November 2
Steve Laflamme
Adventures with Space Junk

December 14
Steve Hubbard
Alaskan Aurora Report

SAVE THE DATE

AstroAssembly

October 4-5, 2024

Details & Registration coming soon

Skyscrapers Presentations on YouTube

Many of our recent monthly presentations on Zoom have been recorded and published, with permission, on the Skyscrapers YouTube channel. Go to the URL below to view recent presentations.

https://www.youtube.com/c/SeagraveObservatorySkyscrapersInc

The Skyscraper is published monthly by Skyscrapers, Inc. Meetings are held monthly, usually on the first or second Friday or Saturday of the month. Seagrave Memorial Observatory is open every Saturday night, weather permitting.

Directions
Directions to Seagrave Memorial Observatory are located on the back page of this newsletter.

Submissions
Submissions to The Skyscraper are always welcome. Please submit items for the newsletter no later than **July 15** to Jim Hendrickson at hendrickson.jim@gmail.com.

E-mail subscriptions
To receive The Skyscraper by e-mail, send e-mail with your name and address to jim@distantgalaxy.com. Note that you will no longer receive the newsletter by postal mail.

Using the ZWO Seestar S50 Smart Telescope on Open Nights

by Laura Landen

Two excellent articles on using the Seestar S50 smart telescope by ZWO appeared in the April 2024 edition of "The Skyscraper." Jeff Padell provided an overview of the scope, emphasizing its ease of use. He has constructed a small window platform that enables using the scope from the comfort of his home. I wish I had a south-facing window that would allow for a similar setup from my house! Greg Shanos did a walk-through of lunar imaging with the Seestar. I highly recommend going back to that issue for a full discussion of the scope.

My emphasis here is using the Seestar on public nights and events. For example, looking through the 12" Meade at M13 can be a bit disappointing after telling visitors that it is a beautiful, large cluster of stars. After all, it really only looks like a gray smudge, let's admit. If someone were imaging the same object with the Seestar, visitors could have a more satisfying experience. Such unintended coordination of imaging occurred at Seagrave after the June members meeting.

I set up my Seestar in the space between the meeting hall, the Clark, and near the 12. I used a taller tripod than that supplied with the scope. I leveled the tripod, then mounted a leveling base like the ones used by Jeff and Greg, with the scope on top. I turned on the Seestar and synced it with my seven-inch Android tablet. I purchased that tablet with 64Gb memory for exclusive use with the Seestar. That way I have no concerns about running out of memory on my device. I connected both the tablet and the scope to an external power brick.

After calibrating the compass and leveling the scope (both functions described by Jeff and Greg), I selected M13 from among the objects suggested for viewing that night. Up comes a page describing the object, along with an image and a graph depicting its elevation throughout the night, with a point on the graph giving its current elevation. From that page, I selected "Go Gazing" so the scope would slew to M13. Within a couple of minutes, the scope announces that it has found the object. Yes, it does talk to you!

M13 doesn't look like much until the scope begins to stack images. However, this is the point at which to focus. I start with autofocus, but sometimes I'm not entirely satisfied with the result. Within the settings is the option for manual focus, which is my preferred method. Once the stars are sharp, I begin imaging. The options are 10, 20, or 30 second images. You can continue

stacking as long as you like, or until further images no longer sync with the composite. Below are two images, one the jpeg directly from the scope, the other one with a few simple edits in Lightroom. The image is 30 minutes stacked of 20 second exposures.

Let me add one final note. There are third-party accessories available, if you can believe it. I found the leveling base on Amazon (or B&H Photo, can't remember which). It's a commonly available item, highly recommended. I've included a photo to below. Also, Lukomatico has made 3-D printed accessories that are helpful. He has made a lens cap (good for storage), a Bahtinov mask (if even the manual focus does not satisfy), and a holder for two-inch filters. A Google search for "Lukomatico Etsy" will take you to his Etsy page, if interested.

In conclusion, I think using the Seestar to image the same objects that are being viewed by the 12" Meade would make for an enhanced visitor experience.

Maine Astronomy Retreat: September 2-8

by Kelly Beatty

Greetings!

Now that we've all had time to recover from April's solar eclipse, it's time to start thinking seriously about all the amazing star parties that await us this summer. So I'm hoping that you can let your club members know about the annual Maine Astronomy Retreat at Medomak Retreat Center in Washington, Maine. The dates are September 2-8, 2024. (I sent a similar announcement to you back in April, but I suspect we were all suffering from "eclipse fatigue" back then.)

The Maine Astronomy Retreat is a star party like no other — it's a vacation for you and your telescope! First of all, it's limited to just 50 participants. Second, there's no need to bring a tent, sleep in a sleeping bag, or eat uninspired food. Medomak provides comfortable, private cabins with beds, bed/bath linens, hot showers, and electricity. And third, you'll enjoy delicious, locally-sourced meals prepared on the premises — including snacks and hot coffee all night. And it's all included in your tuition.

For six nights you'll revel under our dark, moonless skies. This site is quite remote, with a limiting visual magnitude of 6.3 (SQM value: 21.3 MPSAS). We'll have telescopes on hand, but by all means bring yours! There's no need to pack up all your gear each night — just leave it set up on our secure, fully powered observing field. During the day, the expansive Medomak facility is at your disposal. Enjoy its quiet waterfront (with canoes and kayaks), play tennis and basketball on our courts, or take a scenic drive and explore the beautiful coastal towns of mid-coast Maine.

I am one of the retreat's co-leaders, along with Bruce Berger, director of the Amateur Telescope Makers of Boston's Research and Imaging Observatory. This year our keynote speaker is Mike Menzel, NASA Systems Engineer for the James Webb Space Telescope — and, before that, a Deputy Program Manager for the Hubble Space Telescope. (Mike is also an avid amateur astronomer with a 12-inch Skywatcher reflector.)

We would love it if you would pass on this information to your club members or include it in your newsletter and calendar of events.

More details and registration details can be found at astronomyretreat.com Please contact me or Bruce Berger <bruce@scopemaker.com> if you have questions! Or if you'd like to speak with a live human — perhaps to register? — please feel free to give Medomak a call at 866-MEDOMAK (or 301-854-9100).

Thank you so much for your time and consideration.

Clear skies, Kelly

Skylights: July 2024

by Jim Hendrickson

July is the month with the second-shortest amount of observing darkness.

Earth is at its most distant from the **Sun**, called aphelion, at 1:06am EDT on the 6th, when it will be 1.0167255287671 au. This is 3.4% farther away than we were in January.

On the 20th, the Sun enters Cancer, where it will reside for the next 21 days.

July begins with the **Moon** going through its waning crescent phase. On the 1st, it passes 4.7° east of Mars.

On the 2nd, the 14% illuminated crescent is 2.7° north of Uranus and 3.6° southwest of the Pleiades Cluster.

The Moon is new at 6:57pm on the 5th, marking the beginning of Lunation 1256.

On the 7th, the waxing crescent Moon is 2.5° northeast of Mercury. On the 9th, it is 5.0° east of Regulus, in Leo.

First quarter Moon is at 6:39pm on the 13th. The brightest stellar occultation by the Moon, magnitude 1.0 Spica, in Virgo, happens on the 13th-14th. From our location, the star dips out of view at 23:24 and reappears 65 minutes later, when, unfortunately for us, it will be below the horizon..

The waxing gibbous Moon is 3.0° east-southeast of Antares, in Scorpius, on the 17th, and 1.0° north of dwarf planet Ceres on the 19th.

July's Full Moon is known as the Buck Moon. The nearest moonrise to full phase occurs at 8:18pm on the 20th, the evening before it is full.

The Moon is full at 6:17am on the 21st in Sagittarius. Just before it sets at 5:13am, it passes in front of, or occults, a 4.7 magnitude star known as Terebellum (omega Sagittarii), the northwesternmost star in a kite-shaped asterism. The occultation lasts from 1:43am to 2:29am.

The Moon appears 4.0° east of Saturn on the 24th, and 3.7° southwest of Neptune a few hours later, on the morning of the 25th.

The Moon is last quarter at 10:57pm on the 27th, in Aries.

On the 29th, the waning crescent Moon is 4.8° west-northwest of Uranus; the following morning, it lies 3.8° east of the Pleiades.

Mercury is at greatest elongation, 26.9° east of the Sun, on the 22nd, but it will be in a better position to observe earlier in the month, with its latest setting time being at 9:43pm on the 8th, about 80 minutes after sunset.

The 6th-7th is a particularly interesting time to watch Mercury. Make sure to find a place with a clear western horizon and go out just 30 minutes after sunset. Mercury will be about 8° above the horizon, and at magnitude -0.2 should appear in binoculars despite bright twilight. On the 6th, look 10° to the right of Mercury, at about the 3:30 position, to find the 1.3% illuminated, 26-hour young crescent Moon. If you look early enough, and your horizon is low enough, you may spot Venus scintillating through the haze 4° below the Moon.

As the sky darkens, keep watch around Mercury, as some stars may begin to appear, as the planet lies directly in front of the Beehive Cluster, M44, in Cancer on the 6th. Many of the members of the cluster are 7th magnitude, so you'll need a larger telescope with medium magnification to pick them out through the twilight. A bit later, Mercury moves lower, the sky becomes a bit darker, and the stars of the cluster should be easier to observe. Now look 1.4° to the north of Mercury to find magnitude 8.4 Vesta. You may even be able to fit them in the same field of view before they dip below the horizon. Vesta, at 3.359 au, is over three times as distant as Mercury, at 1.093 au.

On the 7th, Mercury no longer lies among the stars of the Beehive, but the crescent Moon is much better placed 2.6° northeast of Mercury, at about its 11:30 position.

Mercury spends the final days of the month within a few degrees of Regulus, in Leo, coming as close as 2.2° southwest of the star on the 25th, before sinking out of sight on its way to inferior conjunction.

Mercury appears as a small gibbous globe until the 18nd, when it shows a 7.4 arcsecond, 50% "half-moon," and subsequently progresses through a crescent phase. On the 28th, it reaches 33% illumination at 8.8 arcseconds.

Venus emerges in the evening sky in July, with visibility extending from 30 to 50 minutes post sunset through the course of the month. Following Mercury, Venus passes in front of the Beehive Cluster in Cancer on the 17th, although at this late date it is unlikely you will be able to observe any of the cluster's stars. Even Vesta will be invisible by the time Venus passes 1.6° to its south on the 23rd.

Venus closes in with Regulus during the final days of July, coming within 5.3° northwest of Leo's brightest star on the 31st. On the same night, notice that Mercury and Venus lie the same distance above the horizon, and are nearly equidistant from Regulus, with Mercury being south-southeast of the star.

Telescopically, Venus doesn't appear larger than a 10-arcsecond 96% gibbous during July.

Rising at 2:00am on July 1st, **Mars** appears 4.7° east of the 23.8-day waning crescent Moon, in Aries.

Mars enters Taurus on July 11, joining Uranus and Jupiter in the celestial bull. Mars pairs with Uranus on the 15th, when the two planets are separated by just 0.6° in our sky, but 18.44 au across the solar system, with Uranus being 12 times more distant and 1/80th the apparent brightness of Mars.

During the second half of July, Mars passes through the gap separating the Hyades and Pleiades clusters in Taurus, and incrementally approaches Jupiter. The 24.4-day waning crescent Moon is 4.0° north of Mars on the 30th.

Also on the 30th, note how Mars, Aldebaran and Jupiter form a near-perfect isosceles

Events in July

1	04:00	Moon 4.7° E of Mars
2	04:00	Moon 2.7° N of Uranus
2	04:00	Moon 3.6° SW of M45
2	23:08	Neptune Stationary
3	04:00	Moon 4.0° N of Jupiter
5	01:06	Earth Aphelion (1.017 au)
5	12:00	Sun at 7h RA
5	18:57	**New Moon (Lunation 1256)**
6	11:00	1 Ceres Opposition (mag 7.3)
6	21:00	Mercury 0.0° NW of M44
6	21:00	Mercury 1.4° SSW of Vesta
7	21:00	Moon 2.5° NE of Mercury
7	21:43	Latest Mercuryset
9	21:00	Moon 5.0° E of Regulus
13	18:49	**First Quarter Moon**
13	23:24	Moon occults Spica (mag 1.0, in: 23:24, out: 00:29!)
15	03:00	Mars 0.6° S of Uranus
17	20:45	Venus 0.0° E of M44
17	22:00	Moon 3.0° ESE of Antares
19	23:00	Moon 1.0° N of Ceres (mag 7.6)
20	07:00	Sun at 8h RA
20	10:00	Sun in Cancer
21	06:17	**Full Buck Moon**
22	02:00	Mercury Greatest Elongation (26.9°E)
23	20:45	Venus 1.6° SSW of Vesta
23	20:00	Pluto Opposition (mag 14.4)
24	23:00	Moon 4.0° E of Saturn
25		Equation of Time = -6:34 (Sun Slow)
25	04:00	Moon 3.7° SW of Neptune
27	22:52	**Last Quarter Moon**
29	04:00	Moon 4.8° WNW of Uranus
30	01:00	Moon 3.8° E of M45
30	04:00	Moon 4.0° N of Mars
31		Delta Aquarid Meteor Shower (20 ZHR)
31		Capricornid Meteor Shower (5 ZHR)

Ephemeris times are in EDT (UTC-4) for Seagrave Observatory (41.845N, 71.590W)

triangle, with the Aldebaran vertex being just over 6° from each planet. Additionally, this is a good time to compare the brightness and color of Mars and Aldebaran, both of which shine at a ruddy 0.8 magnitude.

Mars shows a 5.8 arcsecond globe that is 89% illuminated. Through a large telescope during steady seeing conditions, you may begin to see surface markings.

By the end of July, Mars rises just after 1:00am.

Jupiter resides in Taurus, and now rises into the sky before the onset of astronomical twilight. Through the span of July, Jupiter's rising time ranges from 3:00am to 1:30am. The giant planet's eastward motion is apparent by watching its changing position with respect to Aldebaran, the nearest bright star. In early July, Jupiter is within 5° north of the star.

On the 3rd, the 7.5% illuminated waning crescent Moon is 4.0° north of Jupiter.

Here are some notable arrangements of Jupiter's four Galilean moons during July:

The moons are arranged in order of orbital radius to the east of the planet on the 2nd. Io goes into Jupiter's shadow beginning at 3:23am on the 7th. Io emerges from transit at 4:43am on the 8th. Io and its shadow transit Jupiter on the 15th, and with Europa in eclipse, just Ganymede and Callisto are visible close to Jupiter's northwestern limb. Another arrangement of the moons in order of orbital radius, this time to the west of Jupiter, is visible on the 28th. Io goes into shadow at 3:36am on the 30th. Io and Europa go into transit on the 31st.

As the evening sky's only bright planet, **Saturn** rises into view before midnight in early July, and is visible before 10:00pm at the end of the month.

With Saturn's ring plane nearly aligned with Earth, the positions of its moons are now nearly linear with respect to the planet, similar to the appearance of Jupiter's moons. With a medium-sized telescope, you should be able to easily find, besides its largest moon, Titan, the mid-sized moons Tethys, Dione, Rhea, and Iapetus. These moons orbit Saturn with periods of 1.9, 2.7, 4.5, and 79,0 days, respectively.

With the glare of the rings diminished, a larger telescope will be able to resolve the inner moons Mimas and Enceladus, which orbit Saturn in 22.6 and 32.9 hours, respectively.

The waning gibbous Moon joins Saturn on the 24th.

Uranus is located in Taurus, 5.6° south-southwest of the Pleiades cluster. The waning crescent Moon is 2.7° north of Uranus on the 2nd.

Mars lies 0.6° to the south of Uranus on the 15th, and is within the same binocular field for a week before and after that date.

Neptune, in Pisces, reaches its stationary point on the 2nd, and will appear to be moving westward (retrograde) until December 8. Observing the distant ice giant near its stationary point becomes slightly more difficult as its position among the background stars doesn't change much on consecutive nights.

Through much of July, Neptune lies at nearly the same right ascension as omega Piscium. Aligning an equatorially mounted telescope on the star, then moving 8.2° to the south, one will find themselves within ¼° of the planet.

At magnitude 7.3, **Ceres** is at its best in July, reaching opposition on the 6th, in Sagittarius, at which time the dwarf planet will be at a distance of 1.888 au from Earth, and easy to locate within ½° north of Ascella (zeta Sagittarii).

On the 15th, Ceres is just ½° north of globular cluster M54.

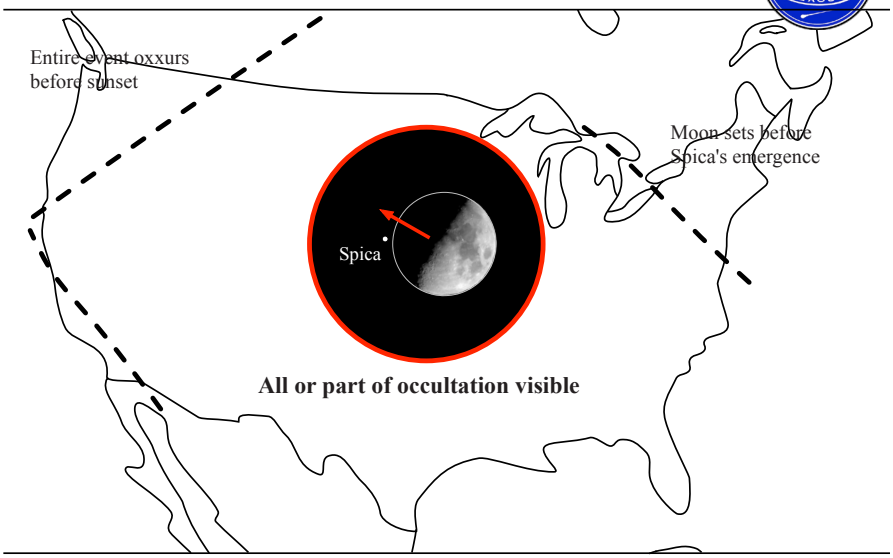
The 97.6% illuminated waxing gibbous Moon passes just 1.0° north-northwest of Ceres at approximately 11:00pm on the 19th.

On the last evening of the month, Ceres is 1.7° north of globular cluster M70.

Just over an hour following Ceres, the other notable dwarf planet, **Pluto**, comes into view, in western Capricornus. Pluto is at opposition on the 23rd, at a distance of 34.046 au, and shining dimly at magnitude 14.4. As distant Pluto hasn't moved much since last season, the globular cluster M75 can still be used as a guide in locating it, 2.2° to its southeast.

Comet 13P/Olbers, a periodic comet with a 67.9-year orbit, appears in the northwestern sky after sunset, and is bright enough to be visible in binoculars. It tracks along the Three

If you can see only one celestial event this month, see this one. The first quarter moon occults Spica on July 13.



Occultation of Spica occurs in the evening hours for most of the US. The moon sets before Spica's emergence for viewers in the northeast. Viewers in the northwest see the event before sunset.

A great binocular event

City	Start	Altitude	End	Altitude	Notes
Boston	11:24	6°	------	----	12:03 moonset
Washington	11:26	11°	12:34	----	12:32 moonset
Atlanta	11:28	19°	12:41	5°	1:08 moonset
Miami	11:48	15°	12:54	1°	12:59 moonset
Chicago	10:10	19ª	11:23	8°	8:24 sunset
St Louis	10:12	23°	11:28	10°	12:25 moonset
New Orleans	10:29	24°	11:44	10°	
Minneapolis	9:57	22°	11:13	12°	
Kansas City	10:05	26°	11:23	14°	8:44 sunset
San Antonio	10:18	33°	11:37	18°	
Denver	8:48	33°	10:11	22°	8:27 sunset
Albuquerque	8:54	37°	10:17	25°	8:21 sunset
Tucson	7:54	41°	9:15	30°	7:31 sunset
Seattle	7:13	31°	8:33	28°	9:03 sunset
San Francisco	7:28	41°	8:44	36°	8:32 sunset
San Diego	7:44	44°	9:02	35°	7:57 sunset

Leaps of the Gazelle during July.

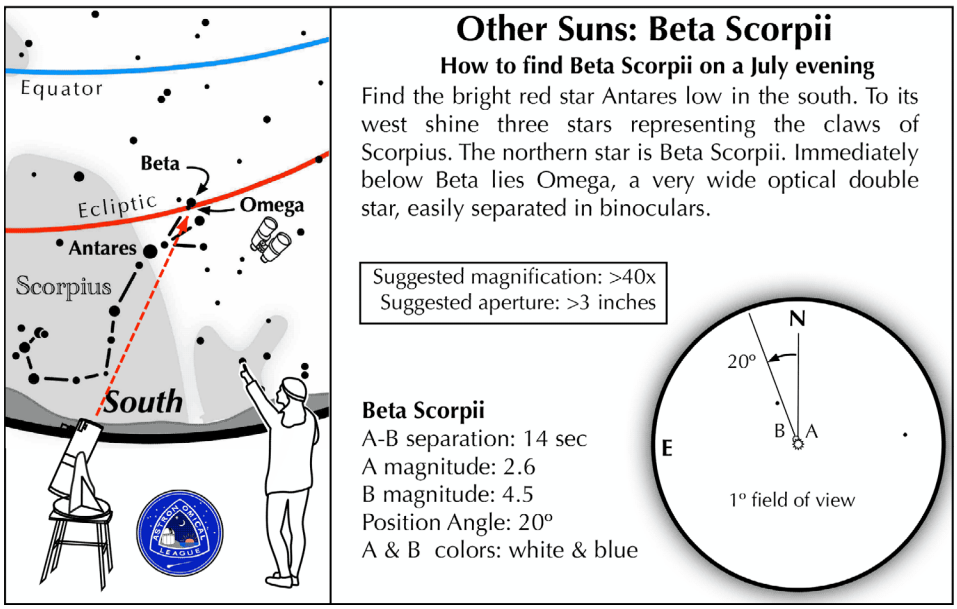
The comet is closest to Earth on June 30, at 1.175 au, and reaches perihelion, at 1.895 au, on the 20th.

A pair of meteor showers coincide at the end of the month, when moonlight will not product much interference. The **Delta Aquarids**, which is active for a month from mid-July through mid-August, peak on the 30th, and can produce as many as 20 meteors per hour. The meteors originate from a point in the sky near delta Aquarii, also known as Skat, which rises around 10:00pm.

The **Capricornids** is a low-rate shower that is active through most of July and into early August. Its peak date is on the 31st, when the radiant, which lies a few degrees north of Algedi (alpha Capricorni), is above the horizon during the hours of darkness; however, the shower produces only about 5 meteors per hour.

Both of these showers overlap with the Perseids, which are active from late July through August.

ASTRONOMICAL LEAGUE Double Star Challenge



Observing Lunar X and V

by Greg Shanos

The Lunar X & V were visible June 13, 2024 at 11:43pm local time or June 14, 2024 3h 43m Universal Time. The moon was at 49% phase and only 29° above the horizon. The sky was perfectly clear down to the horizon however the seeing was below average without a Jetstream. Image was acquired using a Meade LX200GPS ACF 8-inch 2000mm fl f/10 alt-azimuth mounted with a ZWO ASI 178MM monochrome camera and an Optec 0.62X focal reducer. Firecapture v2.7.14 acquired the AVI video which was processed using Autostakkert 4.0.11 beta and Registax 6.1. Further sharpening and processing in Photoshop CS4. Image by Gregory T. Shanos Sarasota, Florida.

The Lunar X (also known as the Werner X) is a claire-obscure effect in which light and shadow creates the appearance of the letter 'X' and 'V'. The Lunar X forms from the rim of the craters Blanchinus, La Caille and Purbach. The X is visible beside the terminator about one-third of the way up from the southern pole of the moon. The Lunar V forms along the northern part of the terminator near the crater Ukert. The V was visible first then the X slowly appeared approximately an hour later. The X and V are visible for only a few hours and then disappear.

5 Year Lunar "X" and "V" Schedule * **

	2024	2025	2026	2027	2028
Jan	18: 0830	6: 1645	25: 1630	15: 0015	4: 0830
Feb	16: 2345	5: 0800	24: 0730	13: 1530	3: 0015
Mar	17: 1400	6: 2300	25: 2145	15: 0600	3: 1500
Apr	16: 0300	5: 1300	24: 1100	13: 1930	2: 0430
					1: 1700
May	15: 1600	5: 0130	23: 2245	13: 0730	31: 0400
Jun	14: 0400	3: 1330	22: 0945	11: 1830	29: 1430
Jul	13: 1430	3: 0015	21: 2000	11: 0500	29: 0030
		1: 1100			
Aug	12: 0130	30: 2130	20: 0630	9: 1530	27: 1100
Sep	10: 1230	29: 0900	18: 1730	8: 0200	25: 2245
Oct	10: 0015	28: 2115	18: 0530	7: 1400	25: 1130
Nov	8: 1245	27: 1045	16: 1900	6: 0300	24: 0145
Dec	8: 0230	27: 0115	16: 0930	5: 1730	23: 1645

* All times are listed as the day of the month and then the hour in **UT**

** All times are approximations based on LTVT calculations. They are accurate to ± 1 hour.

Observer's Challenge:

NGC 6118: Spiral Galaxy in Serpens

by Glenn Chaple

(Magnitude 11.7; Size 4.6' X 1.9')

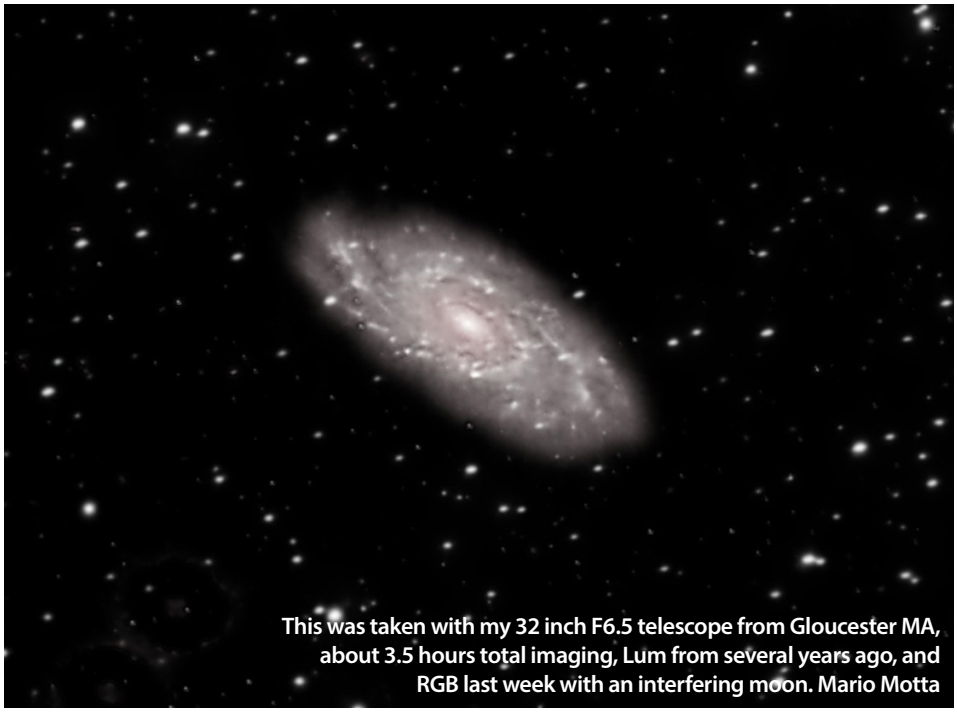
Anyone brave enough to tackle the Astronomical League's Herschel 400 Program is all too familiar with this month's Observer's Challenge, the spiral galaxy NGC 6118 in Serpens Cauda. It is deemed by many to be the most difficult Herschel 400 object to see visually and is considered a challenge for a 10-inch scope under typical suburban skies. However, it can be glimpsed by a skilled observer using a small-aperture instrument if skies are dark enough. In a Cloudy Nights post, one correspondent reported seeing it with a 70mm refractor! Because of its faintness and a tendency to drift in and out of view, NGC 6118 is nick-named the "Blinking Galaxy."

William Herschel discovered NGC 6118 on the evening of April 14, 1785. In his Catalogue of Nebulae and Clusters of Stars, he described it as "Faint, considerably large, extended south proceeding north following, resolvable, 3' long 2' broad." Older star atlases identify NGC 6118 by its Herschel designation H II-402, his 402nd Class II (Faint Nebulae) entry.

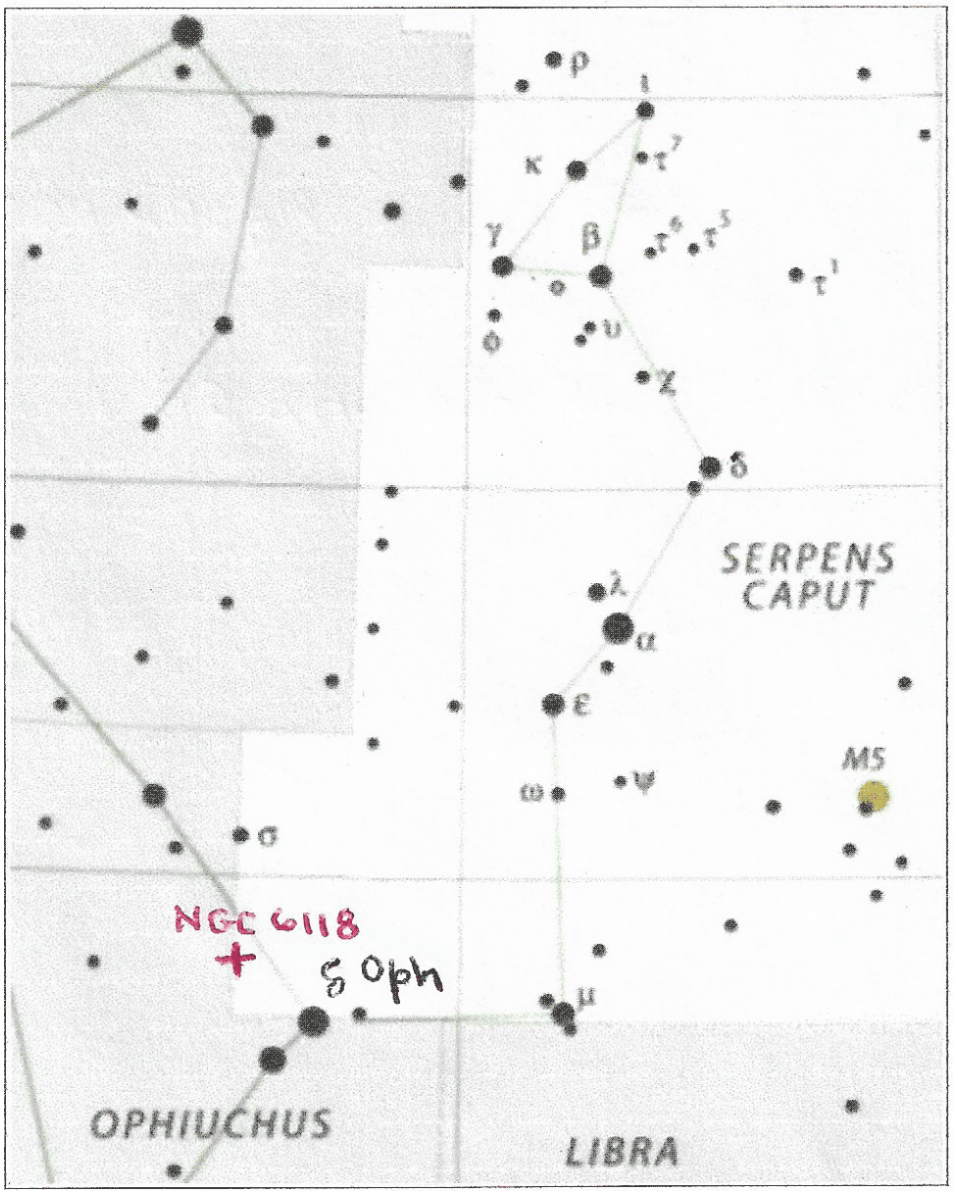
NGC 6118 is located at the southeast corner of Serpens Cauda at the 2000.0 coordinates RA 16h21m48.6s and Dec -02o17'01", a little over a 2 degree star-hop northeast of the 3rd magnitude star delta (δ) Ophiuchi. A 6th magnitude star (HD 147550) that lies 17 arc-minutes to the galaxy's northwest may create a distracting glare.

A recent measurement places its distance at about 67 million light-years, which means those photons striking your retina left around the time of the demise of the dinosaurs. Given that distance and its apparent dimensions, NGC 6118 is slightly smaller than our Milky Way Galaxy.

The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to anyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'd be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge, log on to rogerivester.com/category/observers-challenge-reports-complete.



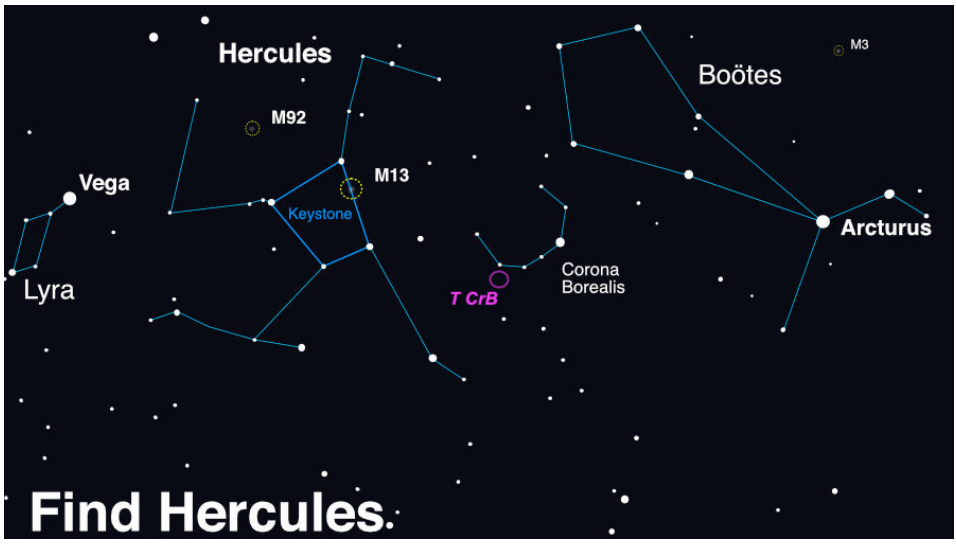
This was taken with my 32 inch F6.5 telescope from Gloucester MA, about 3.5 hours total imaging, Lum from several years ago, and RGB last week with an interfering moon. Mario Motta



NASA Night Sky Notes:

A Hero, a Crown, and Possibly a Nova!

by Vivian White



Look up after sunset during summer months to find Hercules! Scan between Vega and Arcturus, near the distinct pattern of Corona Borealis. Once you find its stars, use binoculars or a telescope to hunt down the globular clusters M13 (and a smaller globular cluster M92). If you enjoy your views of these globular clusters, you're in luck - look for another great globular, M3, in the nearby constellation of Boötes. Image created with assistance from Stellarium: stellarium.org

High in the summer sky, the constellation Hercules acts as a centerpiece for late-night stargazers. At the center of Hercules is the "Keystone," a near-perfect square shape between the bright stars Vega and Arcturus that is easy to recognize and can serve as a guidepost for some amazing sights. While not the brightest stars, the shape of the hero's torso, like a smaller Orion, is nearly directly overhead after sunset. Along the edge of this square, you can find a most magnificent jewel - the Great Globular Cluster of Hercules, also known as Messier 13.

Globular clusters are a tight ball of very old stars, closer together than stars near us. These clusters orbit the center of our Milky Way like tight swarms of bees. One of the most famous short stories, Nightfall by Isaac Asimov, imagines a civilization living on a planet within one of these star clusters. They are surrounded by so many stars so near that it is always daytime except for once every millennium, when a special alignment (including a solar eclipse) occurs, plunging their planet into darkness momentarily. The sudden night reveals so many stars that it drives the inhabitants mad.

Back here on our home planet Earth, we are lucky enough to experience skies full of stars, a beautiful Moon, and regular eclipses. On a clear night this summer, take time to look up into the Keystone of Hercules and follow this sky chart to the Great Globular Cluster of Hercules. A pair of binoculars will show a faint, fuzzy patch, while a small telescope will resolve some of the stars in this globular cluster.

A red giant star and white dwarf orbit each other in this animation of a nova similar to T Coronae Borealis. The red giant is a large sphere in shades of red, orange, and white, with the side facing the white dwarf the lightest shades. The white dwarf is hidden in a bright glow of white and yellows, which represent an accretion disk around the star. A stream of material, shown as a diffuse cloud of red, flows from the red giant to the white dwarf. When the red giant moves behind the white dwarf, a nova explosion on the white dwarf ignites, creating a ball of ejected nova material shown in pale orange. After the fog of material clears, a small white spot remains, indicating that the white dwarf has survived the explosion. NASA/Goddard Space Flight Center

Bonus! Between Hercules and the ice-cream-cone-shaped Boötes constellation, you'll find the small constellation Corona Borealis, shaped like the letter "C." Astronomers around the world are watching T Coronae Borealis, also known as the "Blaze Star" in this constellation closely because it is predicted to go nova sometime this summer. There are only 5 known nova stars in the whole galaxy. It is a rare observable event and you can take part in the fun! The Astronomical League has issued a Special Observing Challenge that anyone can participate in. Just make a sketch of the constellation now (you won't be able to see the nova) and then make another sketch once it goes nova.

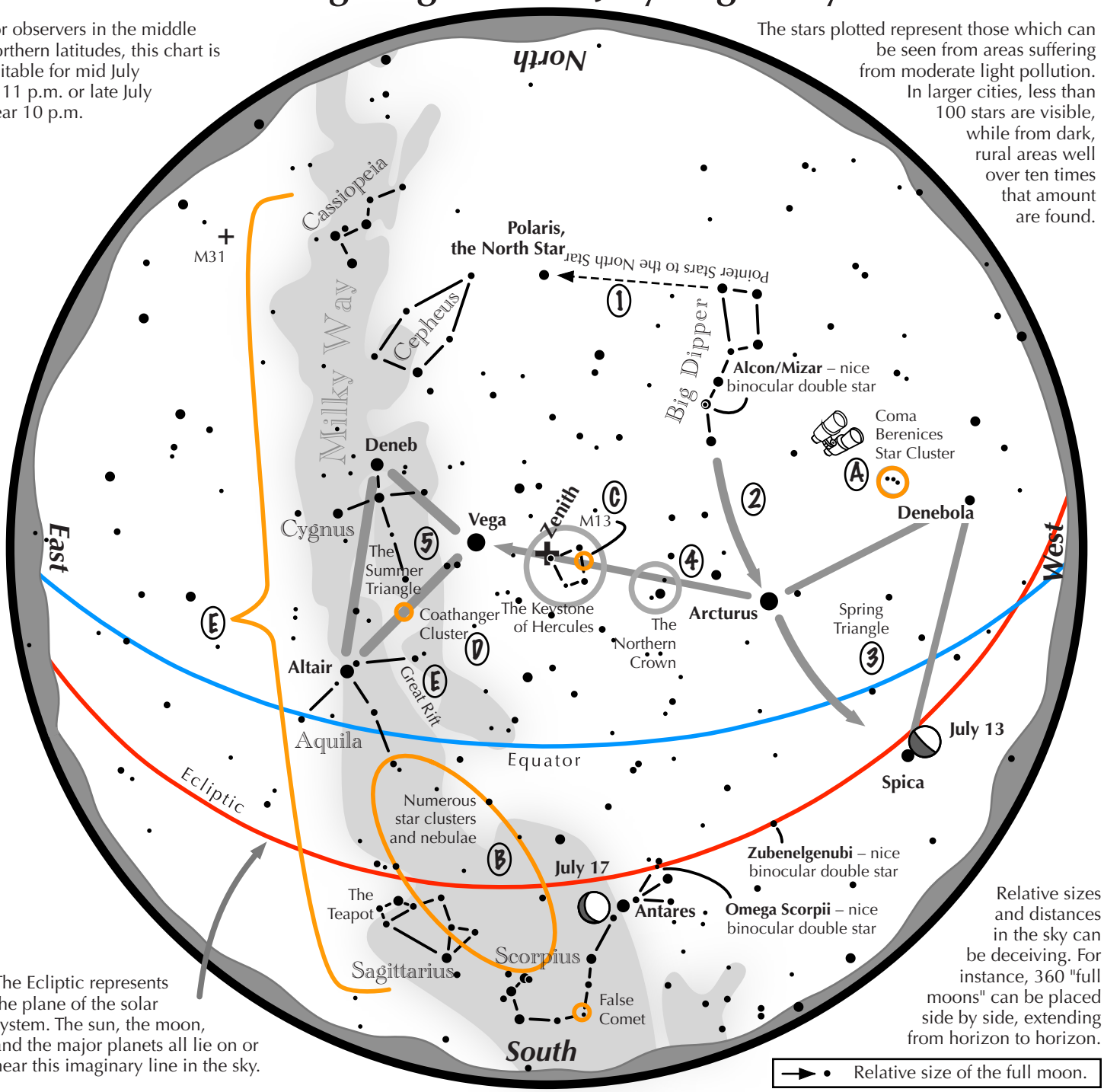
Tune into our mid-month article on the Night Sky Network page, as we prepare for the Perseids! Keep looking up!

This article is distributed by NASA's Night Sky Network (NSN). The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Navigating the mid July Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid July at 11 p.m. or late July near 10 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

Relative size of the full moon.

Navigating the mid July night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
3. To the northeast of Arcturus shines another star of similar brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The
4. Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
5. High in the East lies the Summer Triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.

The Sun, Moon & Planets in July

This table contains the ephemeris of the objects in the Solar System for each Saturday night in July 2024. Times in Eastern Daylight Time (UTC-4) for Seagrave Observatory (41.845N, 71.590W).

Object	Date	RA	Dec	Const	Mag	Size	Elong	Phase(%)	Dist(S)	Dist(E)	Rise	Transit	Set
Sun	**6**	7 02.7	22 39.3	Gem	-26.8	1887.7	-	-	-	1.017	05:18	12:51	20:24
	13	7 31.3	21 46.8	Gem	-26.8	1888.0	-	-	-	1.017	05:23	12:52	20:20
	20	7 59.5	20 36.1	Gem	-26.8	1888.8	-	-	-	1.016	05:29	12:52	20:16
	27	8 27.2	19 08.5	Cnc	-26.8	1889.9	-	-	-	1.016	05:35	12:52	20:09
Moon	**6**	7 04.4	26 54.6	Gem	-5.8	1857.4	5° E	0	-	-	05:29	13:34	21:30
	13	12 38.1	-4 58.2	Vir	-11.6	1793.0	80° E	41	-	-	12:57	18:36	00:06
	20	18 43.5	-28 55.6	Sgr	-12.7	1911.5	161° E	97	-	-	20:18	00:43	05:14
	27	1 13.3	7 53.9	Psc	-12.2	1929.1	105° W	63	-	-	23:09	05:56	12:58
Mercury	**6**	8 34.2	20 17.9	Cnc	-0.3	6.1	21° E	70	0.405	1.109	07:04	14:24	21:43
	13	9 15.2	16 39.2	Cnc	0.1	6.7	25° E	59	0.437	1.000	07:32	14:37	21:40
	20	9 46.9	12 51.5	Leo	0.3	7.6	27° E	48	0.459	0.892	07:50	14:40	21:28
	27	10 08.5	9 25.3	Leo	0.7	8.5	26° E	37	0.467	0.789	07:56	14:32	21:07
Venus	**6**	7 40.2	22 31.6	Gem	-3.8	9.9	9° E	99	0.718	1.707	05:58	13:29	20:59
	13	8 16.6	21 00.6	Cnc	-3.8	10.0	11° E	98	0.718	1.693	06:14	13:38	21:01
	20	8 52.2	19 00.3	Cnc	-3.8	10.1	13° E	98	0.719	1.676	06:31	13:46	21:00
	27	9 26.9	16 34.1	Leo	-3.8	10.2	14° E	97	0.719	1.656	06:48	13:53	20:57
Mars	**6**	3 09.4	16 45.0	Ari	1.0	5.4	55° W	90	1.405	1.718	01:51	08:57	16:03
	13	3 29.4	18 05.7	Tau	0.9	5.5	57° W	90	1.411	1.687	01:38	08:49	16:01
	20	3 49.5	19 17.7	Tau	0.9	5.7	58° W	90	1.417	1.655	01:25	08:42	15:58
	27	4 09.5	20 20.6	Tau	0.9	5.8	60° W	89	1.424	1.622	01:13	08:34	15:55
1 Ceres	**6**	19 04.4	-29 14.1	Sgr	7.3	0.7	173° E	100	2.897	1.884	20:49	00:51	04:54
	13	18 57.6	-29 42.7	Sgr	7.4	0.7	169° E	100	2.901	1.896	20:17	00:17	04:17
	20	18 51.2	-30 06.3	Sgr	7.6	0.6	162° E	100	2.905	1.922	19:41	23:38	03:36
	27	18 45.4	-30 24.7	Sgr	7.7	0.6	154° E	99	2.909	1.960	19:09	23:05	03:01
Jupiter	**6**	4 30.9	21 09.4	Tau	-1.9	33.8	35° W	100	5.029	5.826	02:53	10:17	17:41
	13	4 37.1	21 22.2	Tau	-1.9	34.1	40° W	100	5.030	5.762	02:31	09:56	17:20
	20	4 43.0	21 33.7	Tau	-1.9	34.6	46° W	99	5.032	5.690	02:09	09:34	17:00
	27	4 48.7	21 43.9	Tau	-1.9	35.1	51° W	99	5.034	5.611	01:46	09:12	16:38
Saturn	**6**	23 24.2	-6 02.4	Aqr	1.0	18.0	115° W	100	9.684	9.210	23:30	05:11	10:51
	13	23 23.8	-6 06.7	Aqr	1.0	18.2	122° W	100	9.682	9.107	23:03	04:43	10:23
	20	23 23.1	-6 12.7	Aqr	0.9	18.4	129° W	100	9.680	9.012	22:35	04:15	09:54
	27	23 22.2	-6 20.4	Aqr	0.9	18.6	136° W	100	9.678	8.926	22:07	03:46	09:25
Uranus	**6**	3 34.7	18 59.2	Tau	5.8	3.5	48° W	100	19.583	20.242	02:07	09:21	16:35
	13	3 35.9	19 03.2	Tau	5.8	3.5	55° W	100	19.582	20.149	01:40	08:54	16:09
	20	3 37.0	19 06.8	Tau	5.8	3.5	61° W	100	19.581	20.048	01:13	08:28	15:42
	27	3 37.9	19 09.8	Tau	5.8	3.5	68° W	100	19.58	19.941	00:46	08:01	15:16
Neptune	**6**	0 01.8	-1 12.3	Psc	7.9	2.3	105° W	100	29.899	29.628	23:50	05:48	11:46
	13	0 01.7	-1 13.3	Psc	7.9	2.3	111° W	100	29.899	29.516	23:23	05:21	11:18
	20	0 01.5	-1 14.8	Psc	7.8	2.3	118° W	100	29.899	29.409	22:55	04:53	10:50
	27	0 01.2	-1 17.0	Psc	7.8	2.3	125° W	100	29.898	29.309	22:28	04:25	10:22
Pluto	**6**	20 17.0	-22 59.5	Cap	14.4	0.2	163° W	100	35.050	34.077	21:31	02:04	06:37
	13	20 16.4	-23 02.4	Cap	14.4	0.2	170° W	100	35.055	34.055	21:03	01:36	06:09
	20	20 15.7	-23 05.3	Cap	14.4	0.2	175° W	100	35.060	34.047	20:35	01:08	05:41
	27	20 15.0	-23 08.1	Cap	14.4	0.2	175° E	100	35.064	34.052	20:07	00:39	05:12

Observing the Northern Lights

by Bob Horton

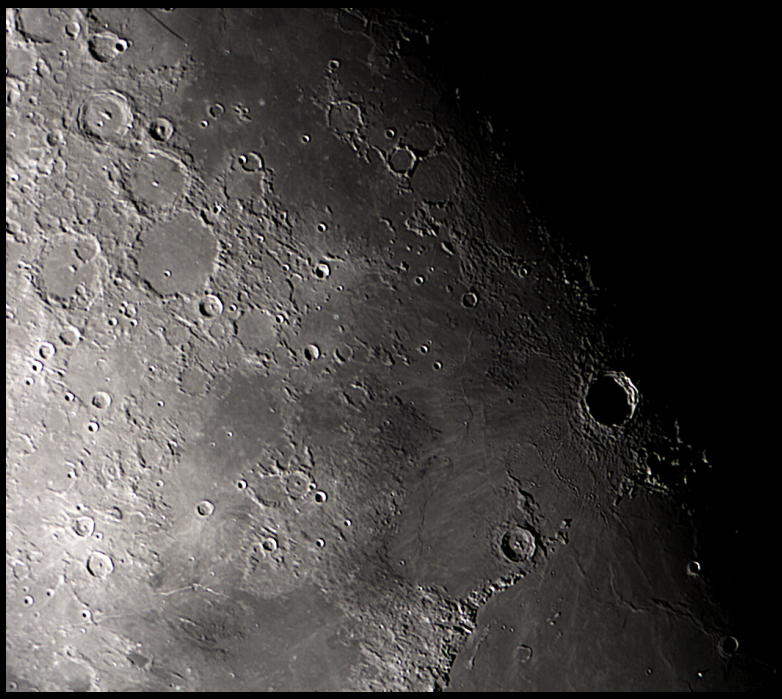
I observed the aurora early Saturday morning, May 11th from about midnight until 3:35 am, from Shippee Sawmill Pond, about a mile from my home in Foster, RI. There were some clouds at midnight, and at that time, all I saw was a glowing band of light near the northern horizon, but activity would soon pick up.

After 1 am, the sky was clearing, and the aurora, which had been a glowing band of light, began to change into a curtain effect, with vertical beams of light reaching upward to about 25 degrees above the horizon. The aurora kept changing in shape, and also expanded outward along the horizon, initially concentrated in the north, but now spreading both towards the east and west. The colors visually were very subtle. I could detect that it appeared slightly green, but I'm sure most people might report that it looked white to them. The photos I took at this time clearly revealed the green color, due to the camera's ability to collect faint light in a long-time exposure. I used 5 seconds or more, intensifying the color that naturally does exist.

Around 2:30 am, it looked like the aurora was calming back down to just a glow near the horizon, and I was beginning to think the show was over. It was also about this time that I got startled - in the pond, a beaver was swimming about, sometimes coming within 20 feet of me, and angrily slapping its tail with a loud splash. So, I almost packed up and left, but I am glad I didn't.

Suddenly, around 2:45 am, the aurora got intensely bright, with brilliant beams of light shooting up, past overhead, forming a giant curtain in the sky. Pulsating flashes of light rippled upward from the horizon through these curtains, and now the colors of green, red and purple were obvious visually. By 3 am, much of the sky was filled with aurora, extending all the way towards the southern horizon, making for a spectacular show.

The intense level of activity lasted to about 3:15am, at which point it once again calmed down to a glow primarily concentrated near the northern horizon. The wondrous celestial show was finally over.



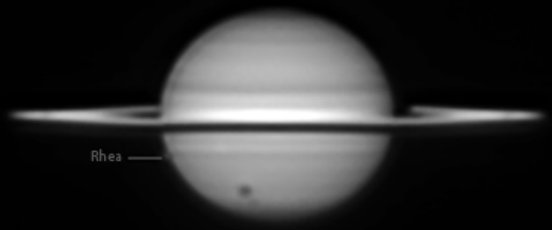
Waxing Gibbous Moon

Taken during Seagrave Observatory open night, June 13, 2024 using a C5 SCT.

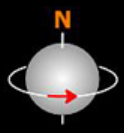
Saturn
June 14, 2024
Shadow Transit of Rhea

Gregory T. Shanos Sarasota, FL
Meade LX200GPS 250mm fl 2500mm f/10
ZWO ASI 462 MM monochrome camera
Derotated eight minutes with WinJupos
Resampled 1.25x in Photoshop CS4

Magnitude: +1.1
Diameter: 17.4″
Phase: 99.7%
Altitude: 53°
Seeing: 5/10 Ave
Transparancy: 6/10 Clearing, Hazy



10h 18.3m UT
Baader 685nm IR longpass filter
CMI: 324.6° CMII: 94.9° CMIII: 57.5°



July 2024

Volume 52

STARRY SCOOP

Editor: Kaitlynn Goulette

WHAT'S UP

This month's morning sky holds a fantastic array of planets. Saturn rises in the east before midnight to make its trek across the sky and is positioned high in the south before sunrise. Mars and Jupiter appear above the horizon a few hours later and are situated in the constellation Taurus the bull. The dazzling star clusters of Taurus, the Hyades and Pleiades, add to the excitement, which along with the planets are observable in the east before sunglow overtakes the sky. The crescent moon joins the trio between July 24th and 31st and creates a great photo opportunity.

In the evening hours, Scorpius and Sagittarius are positioned in the southern sky, bringing with them countless deep sky objects. The edge-on Milky Way spans this region and is loaded with dazzling star clusters and nebulae. The beautiful Swan, Trifid, and Lagoon Nebulae are located close by at a distance of roughly 5,000 light-years from Earth and are found within the Sagittarius-Carina Spiral Arm. In contrast, the neighboring Sagittarius Star Cloud allows observers to peer through a "key-hole" of nearby interstellar dust and view stars as far as 16,000 light-years away.

Spanning from the night of the 28th to the morning of the 29th is the peak of the Delta Aquarius meteor shower. It runs annually from June 12th to August 23rd and produces up to 20 meteors an hour at its peak. The display is the result of Earth traveling through the debris of Comet Marsden and Comet Kracht and will appear to radiate from the constellation Aquarius. Best viewing will be at a dark location after midnight.

July 25th marks the 165th anniversary of the first American PhD awarded for a thesis related to astronomy. Yale College presented the doctorate to Arthur Wright, who studied meteors' orbital motion around the sun based on how they enter Earth's atmosphere. Today, earning a PhD is a task many more have the opportunity to take on and is a celebrated accomplishment in the advanced fields of astronomy and astrophysics.

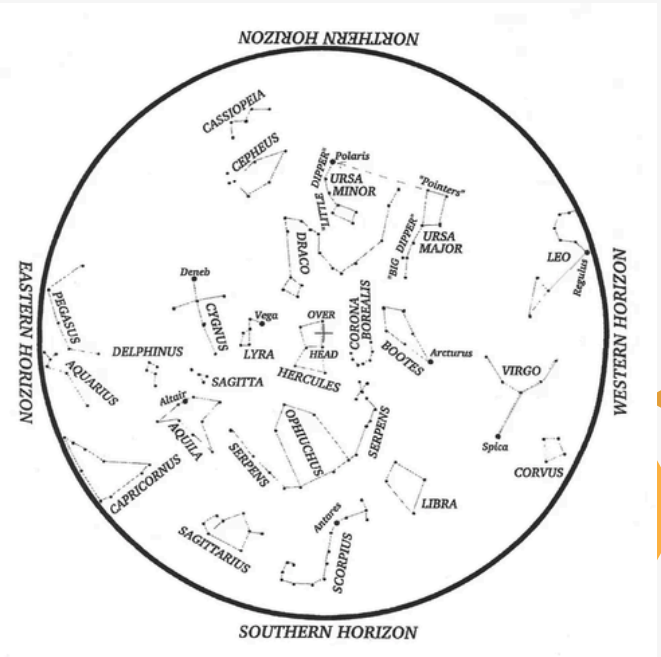
JULY'S SKY

5: New Moon

21: Full Moon

22: Mercury at Greatest Eastern Elongation

28-29: Delta Aquarid Meteor Shower Peak



Credit: Roger B. Culver

Hold star map above your head and align with compass points.

OBSERVATIONS

The Westfield Middle School Space and Astronomy Club recently hosted an observing event and offered views of the waxing crescent moon to students and their families.

The terminator, or day/night line, highlighted craters' details due to the low angle of the sun's light. Attendees had fun learning the names of the many prevalent geological features. Some favorites included the west side of Mare Nectaris and the crater Theophilus. This target contained a central peak that was highlighted by surrounding shadows. While many middle school students were in attendance, a few elementary schoolers also joined in on the fun. Although they were separated by age, a common theme of curiosity and awe connected them.

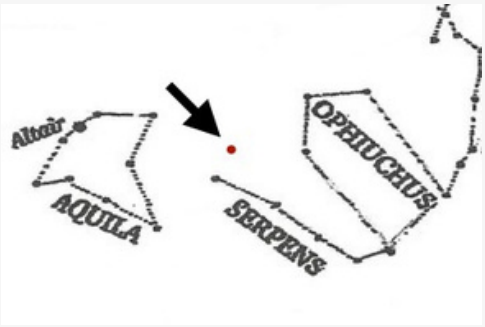
Members of the Westfield High School Space and Astronomy Club were also in attendance and helped operate the telescopes and explain the views to observers. Vice President Andy Liu took charge of the Seestar smart telescope and captured amazing photos and a timelapse of the moon throughout the night. As the evening came to a close, many commented on the bands of clouds traversing across Earth's only natural satellite, comparing it to an eerie movie.

The purpose of the Starry Scoop is to communicate current astronomy and space events. If you want to share your observations or get digital copies of the Starry Scoop, contact starryscoop@gmail.com. The Starry Scoop is now on Facebook. Clear skies!

OBJECT OF THE MONTH

The featured object for the month of July is the Tweedledee Cluster, officially designated NGC 6633. Another popular nickname for this object is the Captain Hook Cluster as its shape resembles its namesake. This large and bright open star cluster can be found in Ophiuchus, roughly spanning the size of the full moon. Positioned about 1,200 light-years away, NGC 6633 was first discovered in the 1740s by a Swiss astronomer but was later rediscovered by Caroline Herschel. Her brother, William Herschel, included it in his catalog and brought it to popularity.

The Tweedledee Cluster is bright enough to be observable with the unaided eye, but binoculars or a small telescope will resolve much more detail. Find the target in the northeastern portion of Ophiuchus, between Canaria in Ophiuchus and Deneb al Okab in Aquila.



Tweedledee Cluster Map

Attendees gaze at the waxing crescent moon overhead.

Directions to Seagrave Memorial Observatory

www.theSkyscrapers.org

From the Providence area:
Take Rt. 6 West to Interstate 295 in Johnston and proceed west on Rt. 6 to Scituate. In Scituate bear right off Rt. 6 onto Rt. 101. Turn right onto Rt. 116 North. Peeptoad Road is the first left off Rt. 116.

From Coventry/West Warwick area:
Take Rt. 116 North. Peeptoad Road is the first left after crossing Rt. 101.

From Southern Rhode Island:
Take Interstate 95 North. Exit onto Interstate 295 North in Warwick (left exit.) Exit to Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

From Northern Rhode Island:
Take Rt. 116 South. Follow Rt. 116 thru Greenville. Turn left at Knight's Farm intersection (Rt. 116 turns left) and follow Rt. 116. Watch for Peeptoad Road on the right.

From Connecticut:
• Take Rt. 44 East to Greenville and turn right on Rt. 116 South. Turn left at Knight's Farm intersection (Rt. 116 turn left) and follow Rt. 116. Watch for Peeptoad Road on the right.
• or • Take Rt. 6 East toward Rhode Island; bear left on Rt. 101 East and continue to intersection with Rt. 116. Turn left; Peeptoad Road is the first left off Rt. 116.

From Massachusetts:
Take Interstate 295 South (off Interstate 95 in Attleboro). Exit onto Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

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