



the Skyscraper

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Phases of the Moon

Full Sturgeon Moon
August 3 15:59

Last Quarter Moon
August 11 16:45

New Moon
August 19 02:42

First Quarter Moon
August 25 17:58

Uncovering the Nature of Dark Matter with Stellar Streams in the Milky Way

An online presentation by Ana Bonaca from Center for Astrophysics.

Saturday, August 1 @ 7:00 PM via Zoom

Contact Steve Hubbard (cstahhs@gmail.com) for Zoom Meeting link and information.

Globular clusters are large congregations of stars, which gradually lose their members to form thin and long stellar streams. In pristine conditions, these streams have a nearly uniform density, however, new observations of one such structure in the Milky Way halo have revealed a likely site of perturbation. The on-sky morphology suggests a recent, close encounter with a massive and dense perturber. Known baryonic objects are unlikely perturbers based on their orbital properties, but observations permit a low-mass clump of dark matter as a plausible candidate. This discovery opens up the exciting possibility that detailed observations of streams could measure the abundance of dark-matter substructure and thus shed light on the nature of dark matter.

Ana Bonaca is a Fellow at the Institute for Theory and Computation, hosted by the Center for Astrophysics | Harvard & Smithsonian. She works on creating a 3D, high-resolution map of the Milky Way halo, which is dominated by the elusive dark matter. In her research, she collects and employs data from ground- and space-based observatories, analyzes numerical simulations and develops new statistical tools. Ana obtained an Astronomy PhD from Yale University and was awarded the Brouwer Prize for a distinguished thesis.

Upcoming Presentations

Saturday, September 5

David Eicher, Editor of
Astronomy Magazine:
Galaxies

Saturday, October 3

AstroAssembly Online

Saturday, November 7

Dr. Jonathan Grindley from
Center for Astrophysics: The
DASCH Project – Ten Years
Later

Saturday, December 5

Member Greg Shanos:
A Guide to Collecting
Meteorites

Saturday, January 2

Mike Wenz: A Behind The
Scenes Look At The Hubble
Telescope

Seagrave Observatory is closed until further notice.

Due to the outbreak of coronavirus, Seagrave Memorial Observatory will remain closed to the public until further notice.

President's Message

by Steve Siok

So last night (July 21) Kathy and I were finally able to see Comet NEOWISE. It was positioned just below the bowl of the Big Dipper. I would like to share a couple of thoughts. Don't think you are going to find it right after sunset! At least in this area, we had to wait until after all the stars in the dipper were obviously visible to the naked eye. We used Stellarium to locate it. It might be a good idea to start out with binoculars. First find the coma and then scan up to locate the tail. Look for the gas tail in addition to the dust tail. As you try to find it naked eye, begin with averted vision. Then see if you can see it direct on. As the next few

weeks progress the comet will head south from the dipper toward Leo, placing it in darker skies away from sunset. But it will also be fading as it leaves the inner solar system. Good Luck!

Plans are proceeding for a virtual Astro-Assembly! We will host it on Zoom just like our monthly meetings. We already have a keynote speaker and are looking for a few more. We are trying for a theme of photography and imaging. The meeting will take place in the afternoon, no evening lecture. So keep in touch. More news will follow.

Speaking of Zoom, several members have been reluctant to join our virtual

meetings. Remember, you do not need a Zoom account to enter our meeting. Just click on the link in the announcement email sent to you. It will automatically let you into the "waiting room". The host will let you in before the meeting starts. If you still have trouble please call a member to help you out.

And finally, our virtual meetings have attracted a long time member to rejoin us. Greg Shanos was a member in the 80's and 90's prior to moving to Florida. Greg will be presenting our December meeting.

So everyone, stay safe and keep looking up.

Watch "Our Town: Scituate" featuring Seagrave Memorial Observatory



Originally aired on March 4 on Rhode Island PBS (WSBE channel 36), the Our Town installment featuring Scituate is now available on YouTube. This episode features Seagrave Memorial Observatory (begins at the 38:35 mark) and is narrated by society historian Dave Huestis.

<https://youtu.be/4C0ajLzzzVI?t=2315>



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 **August 15** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy.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.

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Dave Huestis

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In Memory of Michael Ambrose

by Steve Siok

To all Skyscrapers,

I am deeply saddened to have learned of the sudden passing of our member, Michael Ambrose. Michael is the father of our junior member, Weston Ambrose. Michael and Weston attended many meetings, observing sessions and AstroAssemblies. Weston always brought a telescope to the observatory. He is also our assistant Librarian. Michael was an avid photographer and he was also interested in cacti and succulents. When he spent time in the desert Southwest he loved photographing the desert landscape with the night sky as a backdrop. He will be sadly missed.

I extend Skyscrapers' deepest sympathy to Weston, his mom, his older brother and to Michael's partner, Gordon. I will let all of you know about Michael's obituary and other information as it becomes available.

Respectfully, Steve Siok



Pierre Mechain Messier's Rival Comet-Hunter

by Francine Jackson

It's really nice to have a comet in the sky right now, the brightest in over two decades. With NEOWISE still visible, perhaps we should think of one of the major comet discoverers of the 18th century: Messier? No, Pierre Mechain.

Born August 16, 1744, Mechain, despite a lack of schooling, became a major force in coastline surveying; however, when he met Charles Messier, he added the observations of deep-sky objects, and, with Messier, began to observe comets.

In his lifetime, Mechain is believed to have discovered, or co-discovered, 11 comets. Like Messier, he was aware of the number of deep-sky objects that could be mistaken for comets, and documented them. All together, it is believed he discovered at least two dozen objects, and could be credited with several others.

Even though Mechain is believed to

have discovered fewer comets than Messier, it was well-known at the time their comet counts were, for each, a matter of pride. It is said that one time Messier, so absorbed in observing the sky, fell into a hole and broke his leg. His major concern was that Mechain could then surpass him in comet counts.

Mechain, although known more for his comet discoveries, his major work was mapping the arc of the Earth's surface, in order to determine a measurement which would become the standard of the metric system. Unfortunately, while traveling to Spain, he contracted yellow fever, and never was able to continue, and confirm, his measurements. Although during his lifetime, it was feared his results were fairly large, satellite measurements in the 20th century seem to have determined that his error was



about the measure of a human hair.



Francine Jackson is a NASA Solar System Ambassador, writes the weekly newsletter for Ladd Observatory See more at <http://theskyscrapers.org/francine-jackson>

A Shower of Stardust: Prospects for the August Perseid Meteor Shower

by Dave Huestis

After more than 45 years of enjoying the splendor of the heavens, I still look forward to a simple yet rewarding observing experience watching “burning rocks” falling from the sky. I’m referring to a meteor shower. There are about a dozen major meteor showers and hundreds of minor ones. During August we are fortunate to encounter the second most productive (the December Geminids are better) meteor display of the year — the Perseids. These meteors are a stream of particles stripped off Comet 109P/Swift-Tuttle’s surface by the solar wind and left in orbit around the Sun. Annually the Earth passes through this stream and we experience a display of shooting stars.

For 2020 the Perseids peak on the night of August 11-12, with the best time to observe as many meteors as possible between midnight and dawn. This shooting star display is the northern hemisphere’s most widely observed meteor shower because people spend more time with outdoor activities during late summer. Unfortunately, a last quarter Moon rises around midnight not far from the radiant point in the constellation Perseus from where the meteors appear to emanate. The Moon’s brightness will somewhat reduce the number of meteors to be seen. While the Perseid shower can produce between 60 and 90 meteors

per hour, around southern New England we can usually expect to see no more than 60 shooting stars per hour. Moonlight will further reduce that number this year.

The Perseids, no larger than a thumbnail, blaze across the heavens at 134,222 miles per hour and completely disintegrate as they plunge through our atmosphere. In fact, J. Kelly Beatty, senior editor of *Sky & Telescope Magazine*, makes this analogy. “The little nuggets in Grape-Nuts cereal (see accompanying photo) are a close match to the size of particles that typically create meteors in our atmosphere.” The Perseids are usually green, red or orange in color. And some members of this shower are bright and often produce exploding fireballs. Also, fireballs may be more prevalent as we approach morning twilight. Why? At that time, we are hitting the meteor stream head-on! Maximize your viewing opportunity by finding a dark sky location well away any from light pollution.

The best way to observe any meteor shower is to get comfortable on a chaise lounge or blanket. During the Perseids you must protect yourself from the hungry mosquitoes. (Last summer the EEE virus prevented many of us from observing the Perseids. I prefer the cold December Geminids any day!) Perseus is well up in the northeast sky after midnight. Use the accompanying

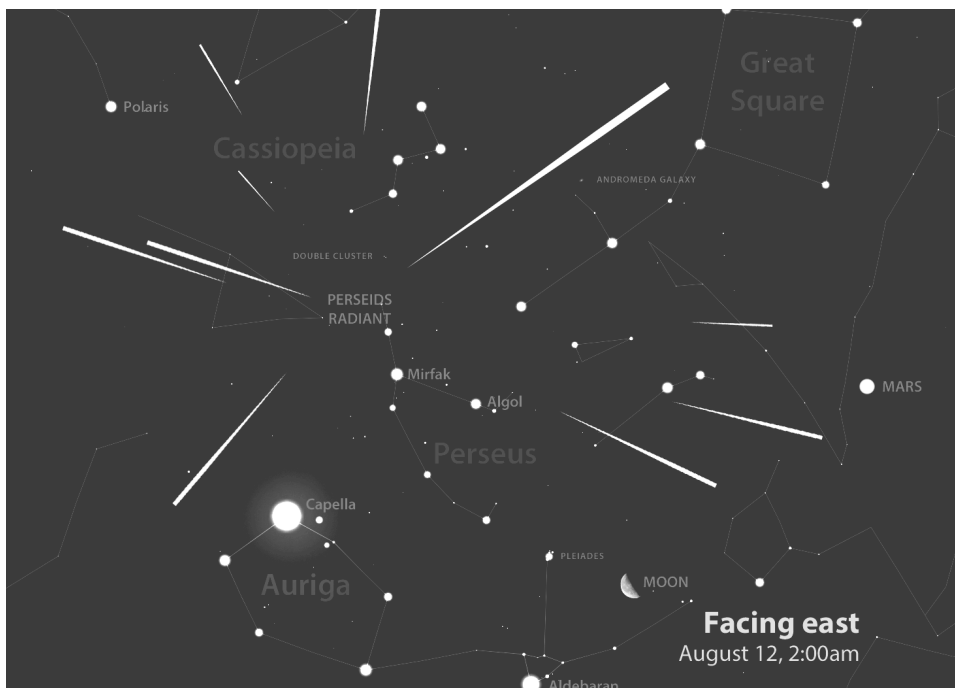


sky map to locate this star pattern above the northeast horizon. If you can identify the constellation of Cassiopeia, which looks like an “M” or “W” tipped sideways, then you’re close enough. As Perseus rises higher the number of meteors will increase. Don’t simply concentrate your gaze in that direction. The meteors can appear anywhere in the sky, so constantly scan as much of the heavens as possible without straining your neck. If the weather cooperates and you have the time, continue your observing session until dawn’s early light overwhelms the stars.

If the weather does not cooperate or you are unable to observe on peak night, try your luck on the nights before and after. You won’t see 60 meteors per hour, but you may catch a couple of dozen or so. And if you happen to see a stationary meteor (think about it—it’s headed directly at you), don’t forget to duck!

And finally, while you are out there under the stars please take notice of Jupiter and Saturn. They will be located to the east (left) of the teapot asterism that is the constellation Sagittarius. Next month I will provide a brief observer’s guide to these beautiful distant worlds.

Keep your eyes to the skies.



Dave Huestis is *Skyscrapers* Historian and has been contributing monthly columns to local newspapers for nearly 40 years. See more at <http://theskyscrapers.org/dave-huestis>

A View of Comet C/2020 F3 (NEOWISE)

by Craig Cortis

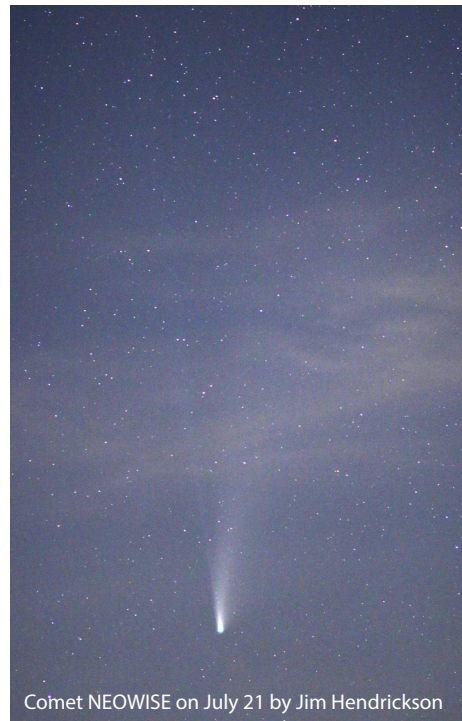
Because of the covid situation and the facts that I don't get a newspaper and don't have email, a smartphone or any other means by which to automatically receive any kinds of news alerts, I did not become aware of this bright new comet until around July 13. I caught a brief mention of the comet on a tv news show and looked it up online the next morning at work. A printout of an ephemeris enabled me to plot its path on a star atlas. Saturday night on 7/18 was actually fairly clear at my home location in the southwest corner of Oxford, MA. The Moon would become New on 7/20.

My neighborhood is about 13 miles south-southwest of the center of Worcester, 2 miles west of I 395 and 5 miles north of the Conn. state line. Usually there are only 1 or 2 bright lights outdoors within my direct view, but they're hundreds of feet away to the south and southwest and I can block them out by changing my observing position or using my SUV as a screen. The sky brightness here has markedly increased over the years but it's still fairly dark compared to much of this region. I'm lucky to have a large property that's fairly secluded, bordered on the north and west by dense woods and big open lawns, on the east and northeast by lawns and trees, and on the south and southwest by my astronomy-friendly neighbor who has come over with his daughter to observe special sky phenomena several times with me over the last few years, for which he's been very appreciative. No problems with bright lights emanating from his property, thankfully. My house sits well above the nearby road, which runs parallel to and along the bottom of a high, long, steep embankment forming the eastern border of the property. Trees line the top edge and slope of the embankment and help to screen headlights along the road below. A 250 foot-long driveway completes the picture.

I've gone into such descriptive detail about my home surroundings because my sense is that many fellow astronomers tend to have at least some interest in knowing the basic observing conditions with which others must contend, particularly with respect to lights and skyglow. It's a shame we always have to be so concerned with lights, but it is unavoidable, after all. Those of you who are new to astronomy are undoubtedly becoming aware of this problem in ways

that might not have been noticed by you before. The proliferation of L.E.D. lights everywhere has only exacerbated the situation.

The position of Comet NEOWISE in UMa on the evening of 7/18 made it form a striking, nearly equilateral triangle with the stars Iota (Talitha) and Kappa UMa, which form the northwestern pair of the "Three Leaps of the Gazelle" pairs. This pair is separated on the sky by about 1.1 degree, yet is actually the tightest of the three wide pairs comprising the charmingly-named asterism. Iota UMa is 3.1 magnitude, Kappa UMa is about 3.6 and an impossibly tight double.



Iota also is a double, but with a 9.5 magnitude companion at only 2" separation, it's a challenge to split. The position is RA 08 59.2, Dec. + 48 degrees 02 minutes. I decided that 9:30 would be the best time to begin observing, as it was a good compromise between the lowering altitude of the comet over the northwest horizon and the remaining twilight. (Nautical twilight was not to end until 9:34, when astronomical twilight would begin and last until 10:20 or so.)

I started looking with a 10X50 binocular and almost immediately spotted the comet right next to the two stars. The bright false nucleus did indeed approximate the visual magnitude of Iota UMa and a nice, sharply-defined tail convinced me that this was

the best comet I'd seen since Hale-Bopp in 1997. In fact, its nucleus looked almost stellar. After a few minutes I set up my 4.12" Astroscan reflector, with a focal length of 442 mm. I used a 28 mm Plossl eyepiece for a low magnification of just 16 power and an easy, wide field. The eyepiece had been made by our own Ed Turco, a respected and well-liked senior member of this club. As an aside to newer members who may not be familiar with him, Ed Turco is among a small, select group of astronomers in Skyscrapers who might be considered master telescope makers and astronomical opticians. We are fortunate to have him in our ranks.

I did not expect to be able to see NEOWISE naked-eye, despite all the hype and reports of it being easily seen in that way. Therefore, I satisfied myself with the view through the Astroscan and went back indoors by 9:50. The next night was cloudy, but both Monday and Tuesday, 7/20 - 7/21, were reasonably clear. I again used the reflector on Monday and tried a 12mm Kellner at 37 power in addition to the 28mm eyepiece, but the image was degraded. On Tuesday night I used the 10x50 bino, followed by a 15x70 bino for a very pleasing view. The comet's tail seemed to've increased in length and its overall brightness had not dimmed since Saturday, 7/18. NEOWISE was still high enough by 10:00 p.m. on 7/21 to see above a treeline and I stayed out long enough so that the diminishing twilight revealed it easily to the naked eye. The tail looked to be roughly 5 to 7 degrees long.

7/25/20 p.m. further comet sightings included views at 9:15 - 9:25 and 10:10 using my 15X70 bino and by naked-eye alone at 10:10. The view by naked-eye was dim but discernable; the comet's false nucleus on 7/25 had enlarged and dimmed a bit since 7/21 and its tail had become more wispy and diaphanous, as well as longer. At 10:10 the comet was positioned such that it made a perfect "coathanger" - type triangle with the stars 57 and 55 UMa, mags.5.2 and 4.8. The comet formed the center (or "hook") of this triangle, and was north of the wide pair of stars. The Moon was still one hour and 17 minutes away from setting at 10:10.

Good luck and best regards to you all - it's been years since I last wrote anything for this newsletter.

NASA Night Sky Notes: Summer Triangle Corner: Deneb

By David Prosper

The Summer Triangle is high in the sky after sunset this month for observers in the Northern Hemisphere, its component stars seemingly brighter than before, as they have risen out of the thick, murky air low on the horizon and into the crisper skies overhead. Deneb, while still bright when lower in the sky, now positively sparkles overhead as night begins. What makes Deneb special, in addition to being one of the three points of the Summer Triangle? Its brilliance has stirred the imaginations of people for thousands of years!

Deneb is the brightest star in Cygnus the Swan and is positioned next to a striking region of the Milky Way, almost as a guidepost. The ancient Chinese tale of the Cowherd (Niulang) and the Weaver Girl (Zhinü) - represented by the stars Altair and Vega - also features Deneb. In this tale the two lovers are cast apart to either side of the Milky Way, but once a year a magical bridge made of helpful magpies - marked by Deneb - allows the lovers to meet. Deneb has inspired many tales since and is a staple setting of many science fiction stories, including several notable episodes of Star Trek.

Astronomers have learned quite a bit about this star in recent years, though much is still not fully understood - in part be-



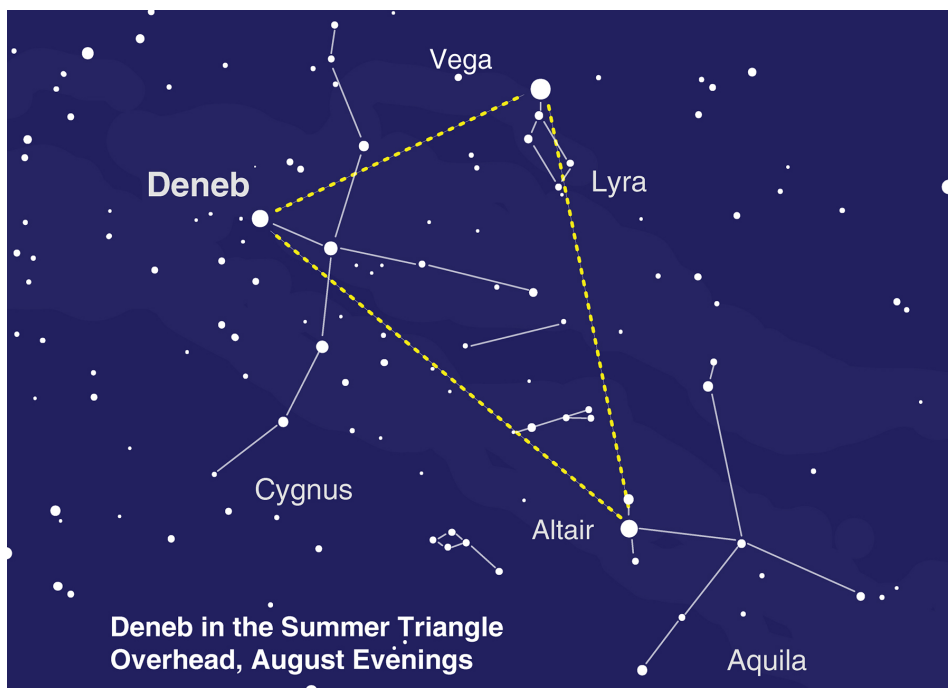
Long exposure shot of Deneb (brightest star, near center) in its richly populated Milky Way neighborhood. Photo credit: Flickr user jpstanley. Source: <https://www.flickr.com/photos/jpstanley/1562619922> License: <https://creativecommons.org/licenses/by-nc-sa/2.0/>

cause of its intense brightness. The distance to Deneb from our Sun was measured by the ESA's Hipparcos mission and estimated to be about 2,600 light years. Later analysis of the same data suggested Deneb may be much closer: about 1,500 light years away. However, the follow-up mission to Hipparcos, Gaia, is unable to make distance measurements to this star! Deneb, along with a handful of other especially brilliant stars, is too bright to be accurately measured by the satellite's ultra-sensitive instruments.

Deneb is unusually vivid, especially given its distance. Generally, most of the

brightest stars seen from Earth are within a few dozen to a few hundred light years away, but Deneb stands out by being thousands of light years distant! In fact, Deneb ranks among the top twenty brightest night time stars (at #19) and is easily the most distant star in that list. Its luminosity is fantastic but uncertain, since its exact distance is also unclear. What is known about Deneb is that it's a blue-white supergiant star that is furiously fusing its massive stocks of thermonuclear fuel and producing enough energy to make this star somewhere between 50,000 and 190,000 times brighter than our Sun if they were viewed at the same distance! The party won't last much longer; in a few million years, Deneb will exhaust its fuel and end its stellar life in a massive supernova, but the exact details of how this will occur, as with other vital details about this star, remain unclear.

Discover more about brilliant stars and their mysteries at nasa.gov.



Deneb in the Summer Triangle
Overhead, August Evenings



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

Spot Vega and the other stars of the Summer Triangle by looking straight up after sunset in August!

Nebula/Cluster in Sagittarius: Messier 20

by Glenn Chaple for LVAS

Mag: 6.3, Size: 30'

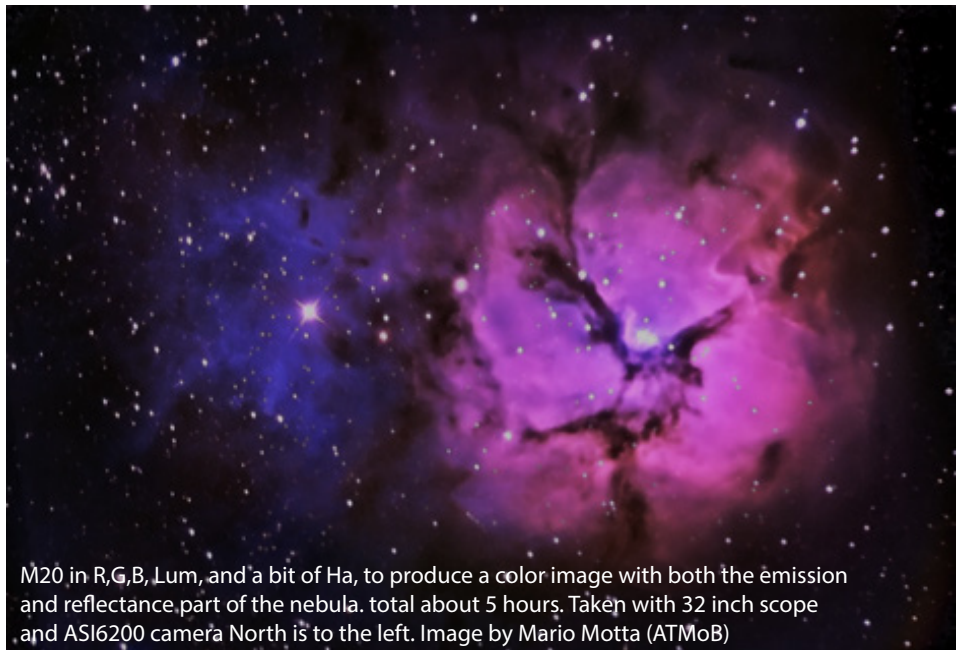
This second installment of the “Summer of Sagittarius” takes us to M20, nick-named the “Trifid Nebula.” Like last month’s Observer’s Challenge (M8, the “Lagoon Nebula”), the Trifid is a nebula/cluster complex. It is also 5200 light years away and may be associated with the Lagoon. Although not a naked eye target, the Trifid Nebula is easily located just 2 degrees north and slightly west of the Lagoon; in fact, they can be viewed together in the same low-power, wide-field telescopic view.

M20 was discovered by Charles Messier on June 5, 1764. William Herschel viewed it 20 years later and catalogued it as four separate objects. Oddly enough, his son John saw three segments of the nebula, and was the first to describe it as “trifid.”

My initial sighting of M20 occurred on the evening of August 20, 1977. Because I had just viewed M8 with my 3-inch f/10 reflector, I was able to note that M20 is much fainter. Sharing a one-degree field with M20 was the open cluster M21. Because of the low magnification used (30X), I failed to notice the Trifid’s bright embedded double star, identified by the William Herschel designation H N 6AC (magnitudes 7.6 and 8.7, spectral classes O8V and B6V, separation 10.7 arc-seconds). Two summers later, I resolved this pretty pair with the same 3-inch and a magnification of 60X. A sketch of M20 I made while attending the 2012 Stellafane Convention and observing with a 4.5-inch f/8 reflector (magnifying power 75X) shows both nebulosity (just 2 areas) and double star.

Compare my sketch with an image made by Mario Motta with a 32-inch scope. Not only are four lobes visible (what Stephen James O’Meara likens to as a “four-leaf clover”), but so is the intervening dark nebula (Barnard 85) that separates them. Also visible are the striking colors – red for the four-lobed part of M20 (an emission nebula) and blue for the area surrounding a 7th magnitude star further north (left in Motta’s image). Its bluish hue indicates that it’s a reflection nebula – a cloud of dust illuminated by the embedded star.

Here are some challenges you might consider while observing M20. Are you able to see the four lobes of O’Meara’s “clover?” He

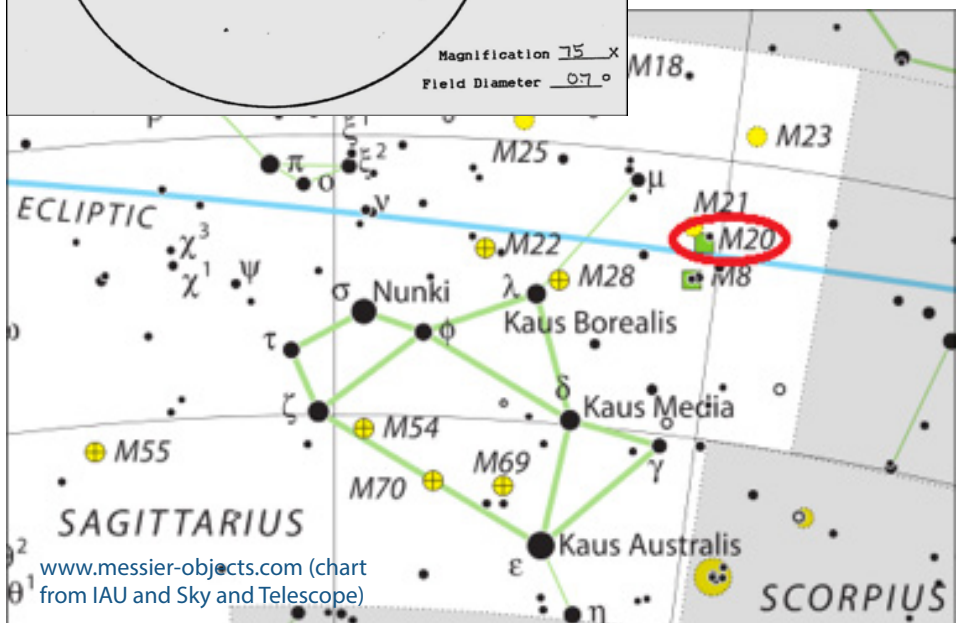
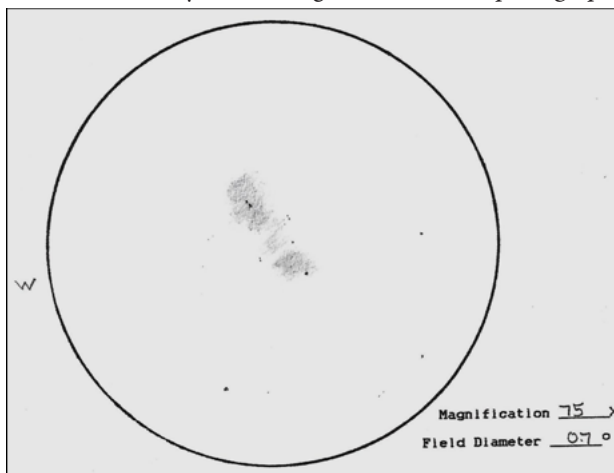


M20 in R,G,B, Lum, and a bit of Ha, to produce a color image with both the emission and reflectance part of the nebula. total about 5 hours. Taken with 32 inch scope and ASI6200 camera North is to the left. Image by Mario Motta (ATMoB)

notes that the fourth leaf is fainter than the others, and jokingly adds that “you should feel lucky if you glimpse it!” Check out H N 6 with high magnification. Can you spot a magnitude 10.4 star just 6.2 arc-seconds north-northeast of the main star (essentially on the opposite side from its magnitude 8.7 partner)? This stellar pair bears the designation H N 40. Why two catalog identities for

the same star? Don’t ask me. You’ll have to ask William Herschel, and he’s not around to provide the answer.

The purpose of the Observer’s Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you’d like to contribute notes, drawings, or photographs, we’ll 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 or access past reports, log on to rogerivester.com/category/observers-challenge-reports.



www.messier-objects.com (chart from IAU and Sky and Telescope)

Dwarf Planet Ceres & Asteroid Seagrave at Opposition

by Jim Hendrickson

Just a few degrees above Fomalhaut, our closest dwarf planet Ceres reaches opposition on August 28. It will be visible in binoculars all month just brighter than magnitude 8, but it will be best to wait until the Moon is out of the way beginning mid-month to make it easier to spot against the faint stars of southern Aquarius.

At opposition, Ceres will be just under 2 astronomical units (AU) from Earth, but even though it is a rather large asteroid at 950km in diameter, it is too small and too far away to show any discernible surface details in a telescope. In fact, it's star-like appearance in a telescope is where the term

"asteroid" comes from.

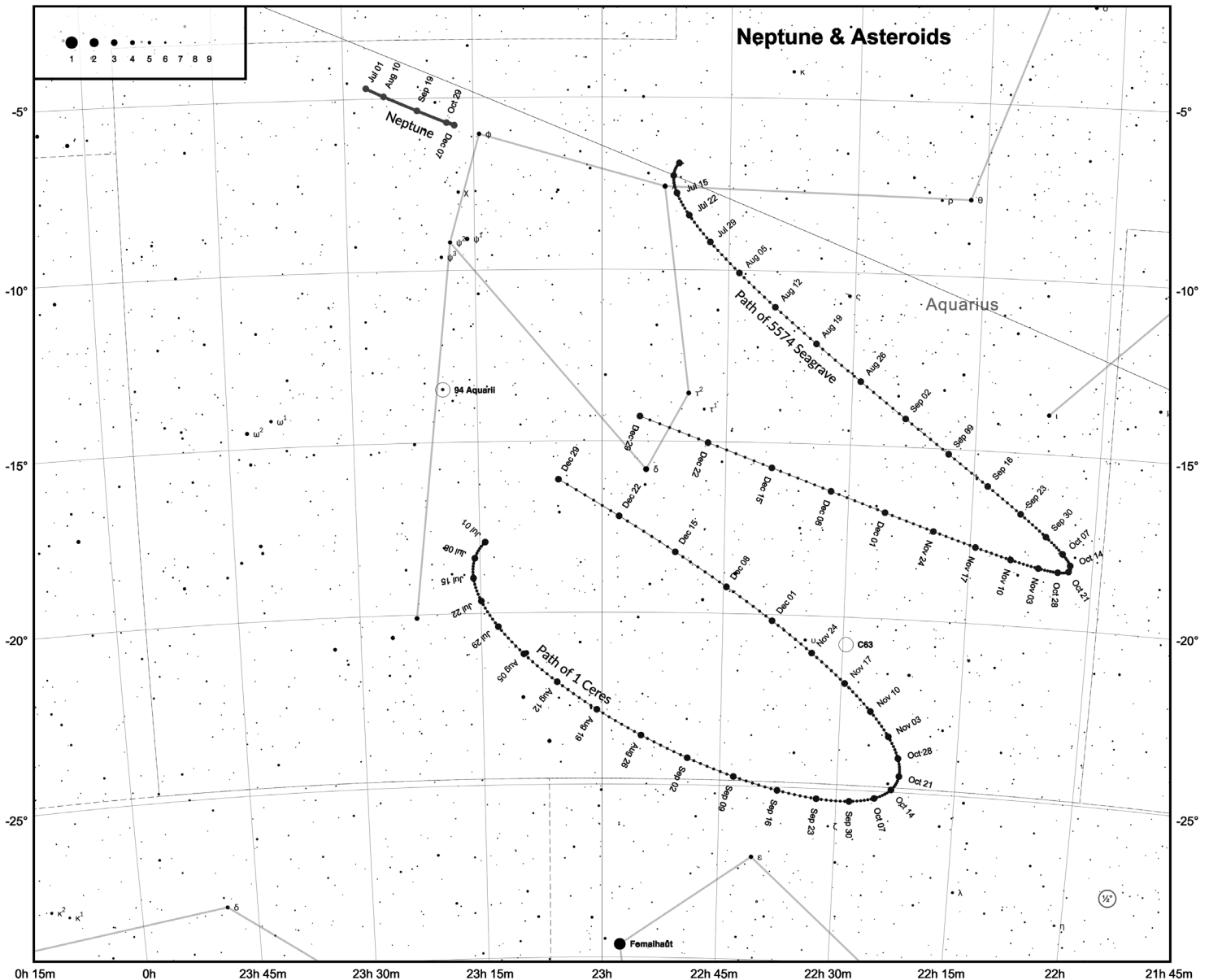
Another object of interest is nearby in the sky. Asteroid 5574 Seagrave (1984 FS) was named in honor of Frank Seagrave in 2014 in commemoration of the 100th anniversary of his observatory in Scituate.

Although Seagrave is just a bit closer to Earth than Ceres at the end of August, at 1.902 AU, it is much smaller and therefore much fainter. It is estimated to be around magnitude 16.2 at opposition on August 27. This should put it within visual range of a 16-inch telescope, and within imaging range of a more modest instrument on a tracking mount.

While exploring this area, don't miss Neptune, just 3° ENE of phi Aquarii. At magnitude 8, Neptune will be as easy to spot as Ceres and should show a distinct blue color through a telescope. Neptune reaches opposition on September 14 at a distance of 28.922 AU.



Jim Hendrickson is newsletter and web editor and has been a member for 20 years. See more at <http://theskyscrapers.org/jim-hendrickson>



The Sun, Moon & Planets in August

This table contains the ephemeris of the objects in the Solar System for each Saturday night in August 2020. Times in Eastern Daylight Time (UTC-4). Ephemeris times are for Seagrave Observatory (41.845N, 71.590W).

Object	Date	RA	Dec	Const	Mag	Size	Elong	Phase(%)	Dist(S)	Dist(E)	Rise	Transit	Set
Sun	1	8 46.6	17 56.8	Cnc	-26.8	1891	-	-	-	1.01	05:40	12:52	20:04
	8	9 13.5	16 03.8	Cnc	-26.8	1892.8	-	-	-	1.01	05:47	12:51	19:55
	15	9 39.9	13 58.1	Leo	-26.8	1894.9	-	-	-	1.01	05:54	12:50	19:45
	22	10 05.9	11 41.5	Leo	-26.8	1897.5	-	-	-	1.01	06:02	12:49	19:35
	29	10 31.6	9 15.8	Leo	-26.8	1900.4	-	-	-	1.01	06:09	12:47	19:24
Moon	1	18 31.5	-24 48.4	Sgr	-12.6	1894.1	148° E	92	-	-	19:01	23:38	04:16
	8	0 30.4	-3 04.2	Cet	-12.3	1768.1	130° W	82	-	-	22:17	04:20	10:32
	15	6 00.0	22 49.3	Ori	-10.8	1839.6	52° W	20	-	-	01:51	09:42	17:34
	22	12 38.3	0 17.4	Vir	-10.4	1983	40° E	12	-	-	10:03	16:06	21:57
	29	19 14.6	-24 57.2	Sgr	-12.4	1874	131° E	83	-	-	17:46	22:26	03:10
Mercury	1	7 37.5	21 26.5	Gem	-0.8	6.1	17° W	70	0.32	1.1	04:18	11:45	19:12
	8	8 32.9	19 58.5	Cnc	-1.4	5.4	10° W	90	0.31	1.25	04:54	12:14	19:33
	15	9 31.2	16 29.5	Leo	-2.1	5	3° W	99	0.33	1.34	05:40	12:45	19:48
	22	10 25.2	11 40.8	Leo	-1.7	4.9	5° E	99	0.37	1.37	06:25	13:10	19:54
	29	11 13.1	6 20.1	Leo	-0.8	5	11° E	94	0.41	1.35	07:05	13:30	19:54
Venus	1	5 35.3	19 16.9	Tau	-4.3	27.6	45° W	43	0.73	0.61	02:24	09:41	16:57
	8	6 01.4	19 47.8	Ori	-4.3	25.3	46° W	47	0.73	0.67	02:21	09:39	16:58
	15	6 29.5	20 04.7	Gem	-4.2	23.4	46° W	51	0.73	0.72	02:20	09:40	17:00
	22	6 59.2	20 03.0	Gem	-4.2	21.8	46° W	55	0.73	0.78	02:22	09:42	17:02
	29	7 29.9	19 39.4	Gem	-4.1	20.3	45° W	58	0.72	0.83	02:27	09:45	17:03
Mars	1	1 13.1	3 35.0	Psc	-1.1	14.6	111° W	86	1.38	0.64	23:02	05:18	11:33
	8	1 24.1	4 33.3	Psc	-1.3	15.5	115° W	87	1.38	0.61	22:42	05:01	11:20
	15	1 33.6	5 22.4	Psc	-1.4	16.4	119° W	88	1.38	0.57	22:21	04:43	11:05
	22	1 41.3	6 01.2	Psc	-1.6	17.4	124° W	90	1.38	0.54	21:59	04:23	10:47
	29	1 46.9	6 29.1	Psc	-1.8	18.4	129° W	91	1.39	0.51	21:35	04:01	10:27
1 Ceres	1	23 13.4	-20 33.8	Aqr	8	0.6	145° W	99	2.98	2.09	22:34	03:18	08:01
	8	23 09.9	-21 22.8	Aqr	7.9	0.6	152° W	99	2.98	2.04	22:06	02:47	07:27
	15	23 05.4	-22 12.2	Aqr	7.8	0.6	158° W	100	2.98	2.01	21:38	02:15	06:51
	22	23 00.2	-22 59.5	Aqr	7.7	0.6	163° W	100	2.98	2	21:09	01:42	06:15
	29	22 54.4	-23 42.2	Aqr	7.7	0.6	165° E	100	2.98	1.99	20:39	01:09	05:38
Jupiter	1	19 27.4	-22 17.3	Sgr	-2.6	47.1	161° E	100	5.15	4.18	18:51	23:28	04:04
	8	19 24.1	-22 24.7	Sgr	-2.5	46.6	153° E	100	5.15	4.22	18:21	22:57	03:33
	15	19 21.3	-22 30.9	Sgr	-2.5	46	146° E	100	5.14	4.27	17:51	22:27	03:02
	22	19 19.0	-22 35.9	Sgr	-2.5	45.4	139° E	100	5.14	4.34	17:22	21:57	02:32
	29	19 17.2	-22 39.6	Sgr	-2.4	44.6	132° E	99	5.14	4.41	16:53	21:28	02:03
Saturn	1	19 59.9	-20 50.2	Sgr	0.1	18.4	169° E	100	10.01	9.01	19:18	00:01	04:43
	8	19 57.8	-20 56.5	Sgr	0.2	18.3	161° E	100	10.01	9.04	18:49	23:31	04:13
	15	19 55.9	-21 02.4	Sgr	0.2	18.2	154° E	100	10.01	9.09	18:20	23:02	03:44
	22	19 54.2	-21 07.6	Sgr	0.2	18.1	147° E	100	10.01	9.14	17:51	22:32	03:14
	29	19 52.7	-21 12.2	Sgr	0.3	18	140° E	100	10.01	9.21	17:22	22:03	02:45
Uranus	1	2 33.3	14 34.0	Ari	5.8	3.6	89° W	100	19.79	19.79	23:41	06:37	13:33
	8	2 33.6	14 35.1	Ari	5.8	3.6	95° W	100	19.79	19.67	23:14	06:10	13:06
	15	2 33.7	14 35.4	Ari	5.8	3.6	102° W	100	19.79	19.56	22:47	05:43	12:38
	22	2 33.6	14 35.0	Ari	5.7	3.6	109° W	100	19.79	19.44	22:19	05:15	12:11
	29	2 33.4	14 33.8	Ari	5.7	3.6	116° W	100	19.79	19.33	21:51	04:47	11:43
Neptune	1	23 27.1	-4 44.7	Aqr	7.8	2.3	139° W	100	29.93	29.16	21:46	03:31	09:16
	8	23 26.6	-4 48.3	Aqr	7.8	2.3	145° W	100	29.93	29.09	21:19	03:03	08:48
	15	23 26.0	-4 52.2	Aqr	7.8	2.4	152° W	100	29.93	29.03	20:51	02:35	08:20
	22	23 25.4	-4 56.4	Aqr	7.8	2.4	159° W	100	29.93	28.98	20:23	02:07	07:51
	29	23 24.7	-5 00.8	Aqr	7.8	2.4	166° W	100	29.93	28.95	19:51	01:35	07:19
Pluto	1	19 41.5	-22 25.7	Sgr	14.3	0.2	164° E	100	34.09	33.11	19:07	23:43	04:18
	8	19 40.9	-22 27.9	Sgr	14.3	0.2	157° E	100	34.1	33.16	18:39	23:14	03:50
	15	19 40.3	-22 29.9	Sgr	14.3	0.2	150° E	100	34.1	33.22	18:11	22:46	03:22
	22	19 39.7	-22 31.8	Sgr	14.3	0.2	144° E	100	34.11	33.29	17:43	22:18	02:54
	29	19 39.2	-22 33.5	Sgr	14.3	0.2	137° E	100	34.11	33.37	17:15	21:50	02:25

July Reports

Skyscrapers Executive Committee Meeting via Zoom

Monday, July 13, 2020 @ 7:30 PM

Meeting called to order by Steve Siok @ 7:36PM

Present: Steve Siok, Kathy Siok, Steve Hubbard, Sue Hubbard, Ian Dell'Antonio, Linda Bergemann, Jim Hendrickson, Bob Horton, Laura Landen, Jim Crawford, Jeff Padell, Bob Janus, Francine Jackson Total 13

This meeting was recorded and all attendees agreed.

1. Treasurer's Report (Kathy)

a) Dues are still coming in. Kathy is still reaching out to those members who have not paid.

b) Our Verizon service has been suspended until further notice, saving us \$80 per month.

We are grandfathered in to keep this rate, as the current rates have risen.

Members of the Observatory committee will keep an eye on the property and call the trustees if there is any problem they need to attend to, as the security cameras have been suspended. Thank you to Jim Crawford for working on this issue.

a) Insurance Coverage is currently being reviewed by a subcommittee of Kathy Siok, Jim Crawford and Sue Hubbard. Sue has much experience in this area and will serve as the point person. There will be a report of findings as soon as this review is completed. The objective is to get the best coverage for the best price and to protect the organization. Kathy believes the renewal takes place in December.

2. Night Sky Network (NSN): (Linda)

A membership spreadsheet is ready to be sent to NSN. Message Groups have been set up. Only 1 member has opted out of joining NSN and will be contacted by Linda. Steve Siok made a suggestion that we advertise our virtual AstroAssembly as part of International Space Week (October 4-10, 2020) on NSN. Re: NSN events calendar, there will be no open nights at Seagrave in August. Steve Hubbard suggested that we advertise our virtual monthly meetings to other local astronomy clubs. There was discussion concerning sharing the link too freely. It was decided to share the link and password for upcoming meetings with the presidents of ATMs of Boston, ASSNE and Springfield Stars and ask them to distribute the information to interested members of

their clubs. Linda Bergemann sent a list of the Astronomy clubs in New England to Steve Siok and Steve Hubbard. They will make contact with the presidents to start this on a trial basis. If it is successful, then more local groups will be invited to participate.

3. AstroAssembly Planning Progress/Discussion (Ian D.)

a) Registration – \$10.00 per person for registration. PayPal will be used on our website and Linda B will be Registrar for the event. There will be an option to make an additional donation to Skyscrapers with the registration fee.

b) Speakers- Per Steve Hubbard, Babak Tafreshi, a National Geographic photographer, has agreed to be our featured speaker. Other suggestions include: Adam Block, Travis Rector, Steve O'Meara and David Levy. Ian Dell'Antonio will make contact with the first two speakers and check on their availability and if so get permission to record their talks. Presentations should be 45 minutes, include Q&A.

c) Advertising: Kathy Siok will send out information to NSN, Astronomical League, S&T, Astronomy magazine and to other amateur societies.

d) Program: Ian will put together a one page program for the event. Francine Jackson volunteered to proofread materials. We will not be asking for advertising for this program.

e) The day's program will include 10 minute breaks between speakers and presentations of Seagrave and past Astro Assembly events will be presented. Laura Landen will put together a power point of photos submitted by members. Laura and Jeff Padell will work on videos of Seagrave Observatory.

f) Host: Laura also volunteered to host the Zoom sessions for AstroAssembly and record the speakers.

g) Jim Crawford will contact Scott Tracy and ask him to MC the event and to act as a co-host on Zoom.

4. Jim Crawford inquired as to whether an audit has been completed.

It has not yet been done. Steve Siok will appoint a committee to complete an audit. Audits are usually completed at the end of each Treasurer's term, so this audit will be done for the last 2 years.

5. Next Meeting Monday, August 17, 2020 at 7PM. via Zoom

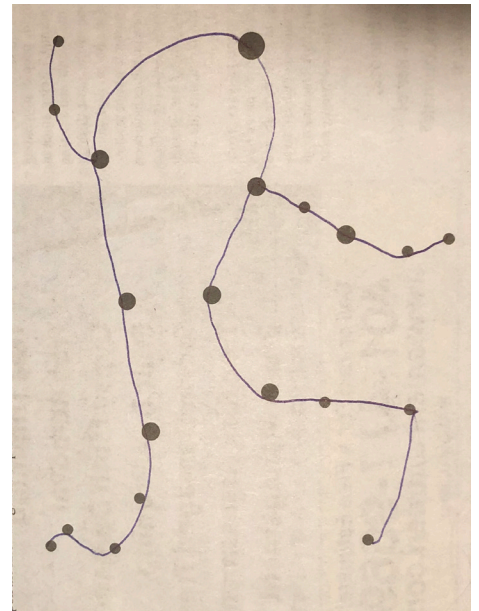
Adjourned at 8:40 PM.
Respectfully submitted,
Sue Hubbard, Secretary

New Members Welcome to Skyscrapers

A Sydney Johnson

Edward McGiveney

T Christine Stevens



The winner of my Create a Constellation Contest is Scarlet Selby, a 9-year old girl in the 4th grade at Hope Elementary School in Scituate.

Her entry was "Soccer Star". This is what Scarlet said of her constellation:

Soccer Star

She is very important because she is the first woman to play on a professional men's soccer team in the Major Soccer League. When you look up at "Soccer Star" you should feel like you can do whatever you try hard to do.

By Scarlet Selby

Scarlet and her family will receive a complimentary Skyscrapers family membership.

Congratulations to Scarlet!



Astrophoto Gallery

The Space Station flying between the Big Dipper and the Comet NEOWISE on July 18, as seen from Shippee Sawmill Pond in Foster by Bob Horton.

Comet NEOWISE by Lloyd Merrill: Date: 07/15/2020; Time: 9:38 EDT; Camera: Canon 7D; Lens: Sigma 70-200 f2.8; ISO: 1000; Exposure time: 4 sec; F-stop: 2.8; Focal length: 200mm

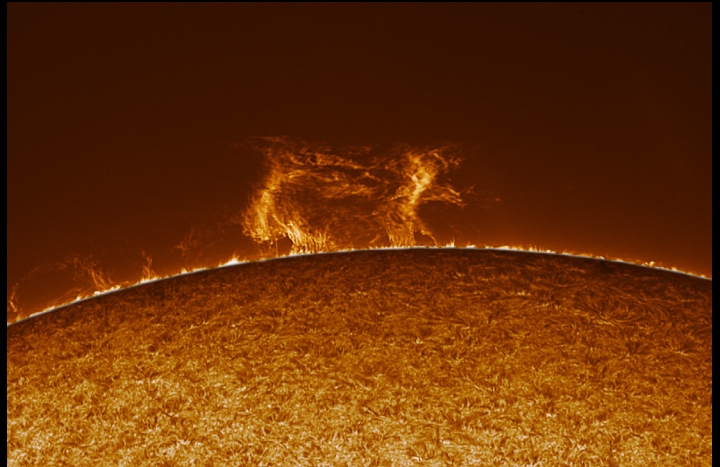


Comet NEOWISE on July 18 on Plum Island after sunset. Visible naked eye, including the tail, below the Big Dipper, from a dark sky site like a beach. In low power binoculars, it's spectacular! By Pat Landers.

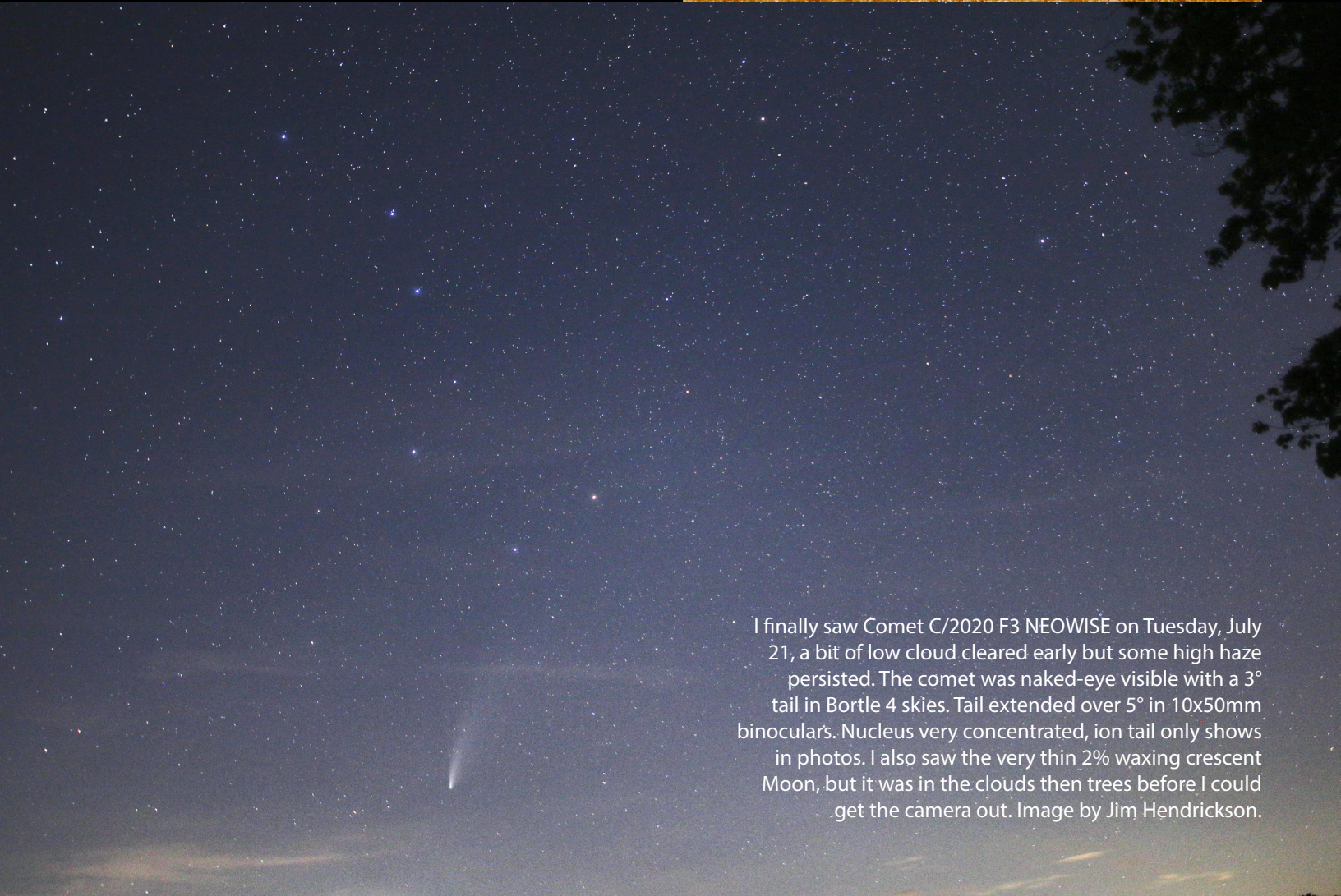




Comet Neowise over Sharon MA by Dan Padell taken with a Canon 70D



Prominence on July 14 by Jeff Padell. Images taken 30 minutes apart.



I finally saw Comet C/2020 F3 NEOWISE on Tuesday, July 21, a bit of low cloud cleared early but some high haze persisted. The comet was naked-eye visible with a 3° tail in Bortle 4 skies. Tail extended over 5° in 10x50mm binoculars. Nucleus very concentrated, ion tail only shows in photos. I also saw the very thin 2% waxing crescent Moon, but it was in the clouds then trees before I could get the camera out. Image by Jim Hendrickson.



This is probably the last image I get of Neowise. The comet is getting dimmer and we now have a waxing moon gaining in brightness every night. This black and white image was taken using the following setup: Date: 07/25/2020; Time: 9:30 - 10:00 pm EDT; Camera: Canon 7D; Lens: Sigma 70-200 f2.8; ISO: 800; Exposure time: 5 sec; F-stop: 2.8; Focal length: 200mm; 60 - 5" second images stacked using MaximDL and post-processed using Pixinsight. By Lloyd Merrill.



Caldwell 42
NGC 7006

Jeff Padell Completes AL Globular Cluster Program

I finally completed the Globular Cluster award, imaging 50 selected globular clusters from the Messier, Palomar, Caldwell and NGC lists. It took me about 2 years to complete the task and about 8 hours to do the paperwork.

Any member can start any of the different award programs and when they are done they submit their work to me and I then check it and forward it to the AL. I am currently working on the Planetary Nebula Award, the Open Cluster Award, and the Binocular Messier Award.

Here is the website where I stored the images Jeff Padell Globular Clusters <https://solarhead.shutterfly.com/astroleagueglobularclusters>

Astronomical League Globular Cluster Observing Program

<https://www.astroleague.org/al/obsclubs/globular/globular1.html>





Comet NEOWISE on
the evening of July
15 by Bob Horton.

Directions to Seagrave Memorial Observatory

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.



47 Peeptoad Road
North Scituate, Rhode Island 02857