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

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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.

Phases of the Moon

Last Quarter Moon
February 4 17:37

New Moon
February 11 19:06

First Quarter Moon
February 19 18:47

Full Snow Moon
February 27 08:17

A Walking Tour of Optical History— Artifacts and Anecdotes from the Astronomical Lyceum

An Online Presentation by John Briggs
Saturday, February 6, 7:00pm EST via Zoom

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

Our forefathers in optics allowed a revolutionary ascendancy of American astronomy in the 19th and early 20th centuries. The Astronomical Lyceum in New Mexico, originally built in 1936 as a theater and gymnasium, now houses a collection of telescopes, optics, archives, and literature from this ascendancy. Its volunteer staff find the artifacts and associated history surprisingly engaging for visitors of all interest levels. The presentation will include unusual items, large and small, created by some of the America's greatest early optical artists, including Henry and Harry Fitz, Alvan Clark and Sons, Carl and Robert Lundin, John A. Brashear, George Willis Ritchey, and the pioneer of astronomical spectroscopy and photography, Lewis Morris Rutherfurd. The collection includes artifacts originating right up through the Space Age, including from the amateur telescope making movement and its surprising influence. While time allows only an overview, the presentation hopes to remind participants how history of science and technology can be powerfully engaging and interesting for essentially anyone when offered in the right spirit. In some cases, the written remembrances of pioneers spell out the inspiration they had, often taken from the beauty of Nature. Arguably no one was more eloquent in such words than Albert A. Michelson. In other cases, the artistry in the artifacts themselves is a similar testimony, and intense pride-of-workmanship is dramatized by how instruments were signed. It is necessary and worthwhile that we and our

students remain aware of these inspirations -- they are all lessons to be learned.

John W. Briggs of Magdalena, New Mexico, has lived and worked at far-ranging observatories in various technical capacities, including Mount Wilson, Yerkes, National Solar, Maria Mitchell, Venezuelan National, Chamberlin, and South Pole Station. In the 1980s he was an assistant editor at *Sky & Telescope* magazine and built Bogsucker Observatory in Massachusetts. He is a past-president of the Antique Telescope Society and a member of many astronomical organizations including the Springfield Telescope Makers responsible for the annual Stellafane Convention in Vermont. He is currently nominated to serve on the board of the American Association of Variable Star Observers.

Upcoming Presentations

Saturday, March 6

Camille M. Carlisle: A Behind the Scenes Look at *Sky & Telescope*

Saturday, April 3

David Iadevaia: Small Radio Telescopes for Amateur Astronomy

Saturday, May 1

Seth Shostak: SETI Institute

Saturday, June 5

Charlie Warren: 25 Years of *Amateur Astronomy Magazine*

President's Message

by Steve Siok

Hello again everyone.

Well, on this last day of January as we wait for the great 2021 Nor'easter, I have two topics I want to share. First is our meeting this coming Saturday. Our speaker is none other than our member John Briggs. He will be talking about his project in New Mexico, The Astronomical Lyceum. It is a museum of telescopes and astronomical books and ephemera. Any of you who remember John from his time in New England will recall that he was always enchanted by old Alvan Clarks. And he would do his best to acquire any old scope that needed a home. Thus was born the seed of his museum. But like most amateur astronomers, an interest always seems to become an obsession. That is what John will share with us on Saturday. Please everyone, the weather this week will not allow you to anything else Saturday night so I hope to see many of you then. The Zoom link will be sent to all members this week.

The first time Kathy and I met John was at the AAVSO convention at Maria Mitchell Observatory on Nantucket. He was a high school summer intern that year and made history by becoming the first male to intern at the summer program. (Reverse discrimination averted!). John was an active member of the New Bedford Astronomical Society and later joined Skyscrapers. His astronomical interests took him all over the country and world. I remember the talk he gave at Seagrave about wintering in Antarc-

tica. And I also remember visiting John in Sunspot, New Mexico as he worked on the Sloan Digital Sky Survey. Lots of memories and I guess many of you will also want to reminisce with him.

Secondly, I want to shout out for Jeff Padell. Jeff has been spearheading the efforts to expand the Skyscrapers presence with The Astronomical League, the umbrella of astronomy clubs nationally. YOU can benefit from the many opportunities offered by participating in the League's Observing programs. I scanned the list and counted 75 different tasks you can get involved in. Most efforts allow you to earn recognition with a personal certificate and lapel pin. Consider getting involved, especially as the weather gets warmer. I would like to point out that there are projects for observers of all levels and observers with all levels of equipment (even no equipment). And now is the time to start thinking and scheming about your Messier Catalog Marathon Run. In March and April it is possible to observe all 110 Messier objects on one night! You will need a dark sky with good horizons, so you might want to observe during the new moon. The new moons this year occur on March 13 and April 12. SO start thinking about it and tie your project to the Astronomical League program!

That's all for now. Please stay safe and wishing you clear skies.

New Members Welcome to Skyscrapers

Robert & Jacquie Jackson
of Hope, RI

Richard Doherty & Daniel
Fountain
of Fall River, MA

Curtis Lotter & Regina
Clement of Scituate, RI

Michael Corvese
Portsmouth, RI

Angella Johnson
Providence, RI



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 **February 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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Geminid Meteor Shower Report & Observing the Winter Circle

by Dave Huestis

I never tire of observing shooting stars, as long as the activity keeps up so I don't fall asleep. So, with exceptionally clear skies and a relatively warm temperature of 42 degrees (not bad for the Geminids), I settled down in a lounge chair on my back porch to scan the heavens for meteors blazing across the sky.

I started my observing session on December 13 at 10:00 p.m. and ended it at 11:30 p.m. During that 90-minute span I counted 20 Geminids. Nothing spectacular. No brilliant fireballs. A few shooting stars rivaled the brightness of Orion's Rigel. Many were much dimmer. Regardless, the frequency of these meteors streaking through the Earth's atmosphere was sufficient to maintain my interest.

As the night progressed a slight breeze came up. Considering it was December, it was still fairly mild. I've observed the Geminids in the past when it was in the lower 20's, with me snuggled up in a sleeping bag. Some high thin clouds began to encroach the sky just before 11:30 p.m., so I called

it quits.

I looked out at 4:30 a.m. to see if it was clear and if the activity had increased. It was totally overcast.

I hope you took advantage of the optimum observing conditions to observe a few meteors yourself.

As I sat facing east around 10:00 p.m., the constellation Gemini was already above my tree line. Orion the mighty hunter was high in the southeast. Soon, seven of the brightest stars we can see from the Earth would be in full view as the star patterns continued to rise higher into the sky.

I'm sure you've heard of the Summer Triangle. This shape is formed by connecting three bright stars— Deneb (in Cygnus), Vega (in Lyra), and Altair (in Aquila). This triangle of stars is high overhead during mid-summer.

Well, the winter sky has its own special asterism, and this one is huge. It's called the Winter Circle or Winter Hexagon. I'll explain why you can get both shapes from the stars.

Please examine the basic star map accompanying this article. This chart represents the sky for February 1 at 9:00 p.m., looking from a point directly overhead (zenith) towards the southern horizon. A circle, or actually an ellipse, can be drawn through each of the labeled stars. However, you can also draw a straight line from one star to the next and create a hexagon. Betelgeuse, though inside either pattern, is still considered part of the asterism.

Before we examine each of the stars in the Winter Circle, let's review three important terms. First, the brightness of any celestial object is called its magnitude. The basic idea is that the more negative the magnitude, the brighter the object. The more positive the magnitude, the dimmer the object is. So, the Sun is -26.74, the Full Moon -12.92, Venus -4.89, Saturn approximately 0, well known Polaris (the North Star) is magnitude +2, and the naked-eye limit with no light pollution is magnitude +6. Pluto is about +13.65. (Usually the plus sign (+) is assumed and not used, but I do so in this column for clarity.)

Second, a star's distance is measured in light years. One light year is equal to just under six trillion miles. Third, the spectral classification of a star is categorized using the following letters: O, B, A, F, G, K, M, and often followed by additional numbers and letters to further refine the classification. "O" stars are the hottest while "M" stars are the coolest.

Let's start our tour of the Winter Circle with the brightest star we can see in the sky (besides the Sun of course) — **Sirius**. Sirius is in Canis Major, the Big Dog. Sirius shines at magnitude -1.44 and it is 8.7 light years away. Do the math and this fairly close neighbor to our Sun is 52.2 trillion miles from us. For you Rhode Islanders that's much farther than Newport or Westerly! Sirius is a hot, blue-white star (spectral class A0) about 1.7 times the diameter of our Sun.

Next, we move northward and clockwise in the sky to locate **Procyon** in Canis Minor, the Little Dog. Procyon is a white star (F5) shining at magnitude +0.40 and is 11 light years distant. It's about twice the diameter of our Sun. Moving farther northward we encounter the Gemini twins, **Pollux** and **Castor**. Pollux is 34 light years distant,





while Castor is 18 light years farther away at 52. Pollux is a cool, orange giant (K0) ten times the Sun's diameter, while Castor is a hot, blue-white star (A1) only twice the diameter of the Sun. Pollux and Castor shine at +1.16 and +1.93 magnitude respectively.

Now we swing up and over to a constellation almost directly overhead — Auriga, where we find +1.93 magnitude **Capella**. While Capella (G6) is a class "G"-type yellow star like the Sun (G2), it has three times more mass and is just over seven times the Sun's diameter. Next, we proceed south to encounter the orange giant (K5) **Aldebaran** in Taurus. Aldebaran represents the bull's eye in the star pattern known as the Hyades star cluster (shaped like a "V"). Aldebaran, 65 light years away, is a cool star which has expanded to be just over 44 times the diameter of the Sun with only 2.5 times our

Sun's mass.

Continue to swing southward in the sky until we arrive at the bottom right star representing Orion's left foot. (Please note: Orion is facing us.) This star is +0.18 magnitude **Rigel**, a blue supergiant (B8) 800 light years away — the most distant of the Winter Circle stars. Rigel is 62 times the diameter of our Sun and contains 17 times more mass. We now complete the tour of the Winter Circle by swinging back to Sirius.

But wait. No, I didn't forget about **Betelgeuse**. Betelgeuse is the red supergiant (M2) star that marks the top right shoulder of Orion. It shines at magnitude +0.45 and resides at a distance of 520 light years. Betelgeuse is also a very large star, measuring in at a conservative 950 solar diameters. If you replaced our Sun with Betelgeuse it

would extend out to the asteroid belt between Mars and Jupiter.

As you can see by this small sampling of stars that comprise the Winter Circle, stars are quite a lot like people. They are all different, but their differences make them unique and important.

The next time you have an opportunity to observe the Winter Circle, you will have a better understanding and appreciation of the scale and diversity of our stellar neighbors in this region of the Milky Way Galaxy.

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>



Monthly Presentation Videos on YouTube

With our monthly meetings going virtual this year, we have begun to record and publish, with permission, our monthly Zoom presentations on the Skyscrapers YouTube channel. Go to the URL below to view recent presentations.

<https://www.youtube.com/channel/UCEZ5UnO-Sly0DXsSrUAxONG>

The Sun, Moon & Planets in February

This table contains the ephemeris of the objects in the Solar System for each Saturday night in February 2021. Times in Eastern Standard Time (UTC-5). 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	6	21 19.4	-15 37.0	Cap	-26.8	1946.3	-	-	-	0.99	06:52	12:00	17:08
	13	21 47.2	-13 21.4	Cap	-26.8	1943.9	-	-	-	0.99	06:44	12:00	17:17
	20	22 14.3	-10 55.1	Aqr	-26.8	1941.1	-	-	-	0.99	06:34	12:00	17:26
	27	22 40.9	-8 20.5	Aqr	-26.8	1938.1	-	-	-	0.99	06:23	11:58	17:34
Moon	6	16 08.9	-20 03.5	Sco	-11.6	1903.2	73° W	36	-	-	02:26	07:17	12:02
	13	22 47.1	-13 25.4	Aqr	-8.2	1834.9	15° E	2	-	-	08:04	13:37	19:18
	20	4 07.8	19 28.4	Tau	-11.8	1807.4	92° E	52	-	-	11:01	18:39	02:25
	27	10 34.0	14 00.0	Leo	-12.7	1942.8	173° E	100	-	-	18:03	00:51	07:26
Mercury	6	21 36.7	-10 44.9	Cap	6.0	10.0	6° E	3	0.33	0.67	06:50	12:11	17:33
	13	21 05.6	-12 54.9	Aqr	3.7	10.3	10° W	6	0.36	0.65	06:00	11:13	16:26
	20	20 51.4	-15 08.0	Cap	1.2	9.3	21° W	25	0.40	0.72	05:28	10:34	15:40
	27	21 00.1	-16 05.3	Cap	0.5	8.1	26° W	43	0.44	0.83	05:14	10:17	15:20
Venus	6	20 32.4	-19 39.6	Cap	-3.8	10.2	12° W	98	0.73	1.66	06:24	11:14	16:04
	13	21 08.3	-17 30.7	Cap	-3.8	10.1	10° W	99	0.73	1.68	06:23	11:22	16:21
	20	21 43.2	-14 57.4	Cap	-3.8	10.0	9° W	99	0.73	1.69	06:20	11:29	16:39
	27	22 17.2	-12 03.9	Aqr	-3.8	9.9	7° W	99	0.73	1.70	06:16	11:35	16:56
Mars	6	2 49.5	17 40.4	Ari	0.6	7.5	88° E	89	1.56	1.24	10:19	17:28	00:38
	13	3 05.0	18 48.8	Ari	0.7	7.1	85° E	89	1.56	1.31	10:02	17:16	00:31
	20	3 21.0	19 53.3	Ari	0.8	6.8	81° E	89	1.57	1.38	09:46	17:05	00:24
	27	3 37.5	20 53.3	Tau	0.9	6.5	78° E	89	1.58	1.45	09:31	16:54	00:17
1 Ceres	6	23 52.8	-9 43.0	Aqr	9.2	0.3	38° E	99	2.94	3.65	09:04	14:31	19:59
	13	0 02.0	-8 30.8	Cet	9.2	0.3	33° E	99	2.94	3.71	08:41	14:13	19:45
	20	0 11.5	-7 18.4	Cet	9.2	0.3	29° E	99	2.93	3.76	08:18	13:55	19:31
	27	0 21.1	-6 05.9	Psc	9.2	0.3	25° E	99	2.93	3.80	07:56	13:37	19:18
Jupiter	6	20 55.4	-17 55.0	Cap	-1.8	32.4	6° W	100	5.08	6.06	06:38	11:34	16:29
	13	21 02.1	-17 27.9	Cap	-1.8	32.5	12° W	100	5.08	6.04	06:16	11:13	16:10
	20	21 08.7	-17 00.3	Cap	-1.8	32.7	17° W	100	5.08	6.02	05:53	10:52	15:51
	27	21 15.2	-16 32.4	Cap	-1.8	32.9	22° W	100	5.08	5.98	05:30	10:31	15:32
Saturn	6	20 33.4	-19 13.2	Cap	0.7	15.1	12° W	100	9.98	10.95	06:22	11:12	16:02
	13	20 36.8	-19 01.5	Cap	0.7	15.2	18° W	100	9.98	10.92	05:57	10:47	15:38
	20	20 40.0	-18 50.0	Cap	0.7	15.2	24° W	100	9.98	10.87	05:32	10:23	15:15
	27	20 43.2	-18 38.7	Cap	0.7	15.3	30° W	100	9.98	10.82	05:06	09:59	14:51
Uranus	6	2 19.0	13 25.3	Ari	5.8	3.5	80° E	100	19.77	19.92	10:04	16:56	23:47
	13	2 19.6	13 28.6	Ari	5.8	3.5	73° E	100	19.77	20.04	09:37	16:29	23:21
	20	2 20.4	13 32.6	Ari	5.8	3.5	66° E	100	19.77	20.15	09:10	16:02	22:54
	27	2 21.3	13 37.3	Ari	5.8	3.5	59° E	100	19.76	20.26	08:43	15:36	22:28
Neptune	6	23 22.8	-5 10.0	Aqr	8.0	2.2	32° E	100	29.93	30.76	08:17	14:00	19:44
	13	23 23.7	-5 04.3	Aqr	8.0	2.2	25° E	100	29.93	30.82	07:50	13:34	19:18
	20	23 24.6	-4 58.4	Aqr	8.0	2.2	18° E	100	29.93	30.86	07:23	13:07	18:51
	27	23 25.6	-4 52.3	Aqr	8.0	2.2	12° E	100	29.93	30.90	06:56	12:40	18:25
Pluto	6	19 50.3	-22 17.5	Sgr	14.4	0.2	22° W	100	34.22	35.13	05:52	10:28	15:05
	13	19 51.2	-22 15.8	Sgr	14.4	0.2	29° W	100	34.22	35.08	05:25	10:02	14:38
	20	19 52.1	-22 14.3	Sgr	14.4	0.2	36° W	100	34.23	35.02	04:58	09:35	14:12
	27	19 52.9	-22 12.9	Sgr	14.4	0.2	43° W	100	34.23	34.95	04:31	09:08	13:45

The Hyades: More than Meets the (Bull's) Eye

by Jim Hendrickson

Taurus is one of the most prominent constellations in the sky. Positioned high overhead during mid-winter evenings, the celestial bull is notable for three attractions, all visible to the unaided eyes. First, the constellation is roughly centered around the first magnitude K giant star Aldebaran. Part of the larger Winter Hexagon or Heavily G asterism, Aldebaran is commonly associated with the eye of the bull, but its name is derived from Arabic and loosely translates to “follower,” because it rises immediately behind the Pleiades, the constellation’s most well-known star cluster. While the Pleiades needs no introduction, Taurus’ second large and bright cluster seems to attract far less attention, unless the Moon or Venus happens to be passing in front of it.

At a distance of about 150 light years, the Hyades is the second-closest known star cluster to our solar system, after the Ursa Major Moving Group. Many will be surprised to learn that Aldebaran is not associated with the cluster, despite its apparent position along its southeastern edge, Aldebaran is actually a foreground star, lying just 67 light years away, less than half the distance to the Hyades. The cluster is usually described as the 3-degree wide V-shaped

asterism extending westward from Aldebaran, then angling back northward where the opposite open end of the V is just north of Aldebaran. It is a stunning sight in binoculars, and a small telescope will reveal about two dozen stars.

But, upon a closer look, it is clear that the Hyades is not as tightly confined and distinct as the Pleiades. This is due to the Pleiades being about three times as distant as the Hyades, and because the Pleiades is a much younger cluster, only about 100 million years, compared to the Hyades’s estimated age of 625 million years. A leisurely perusal of the sky surrounding the Hyades with binoculars reveals many nearby stars similar to the Hyades, both in brightness and in scatter density, but apparently separated from the familiar V-shaped asterism forming much of the head of Taurus. An example is Davis’s Dog asterism, just a few degrees north of Aldebaran. There is also a scattering of stars southeast of Aldebaran. Are any of these stars near the Hyades, not just in angular separation, but in physical space? Is there more to the Hyades than initially meets the eye?

We can consult the data from the European Space Agency’s Gaia mission to

determine this. By taking a survey of the parallaxes of these stars, we can determine their distance, and by analyzing their proper motions we can determine if they have a common trajectory through space. Together, these two pieces of information give us a good idea of what a star cluster looks like in three-dimensional space.

Using an equatorial chart plotted with the Yale Bright Star Catalog (BSC) as a base reference, let’s start by querying all of the stars within 15 degrees of the approximate center of the Hyades cluster (RA: 4h 28m, Dec: +17°). We can then compute a range of parallax to query the stars within 25 light years of the cluster’s approximate distance of 150 light years. This gives us a parallax range of 26.1 milliarcseconds (mas) to 18.6 mas.

Since proper motion data only gives us two-dimensional vectors, we can also query radial velocity data from Gaia to determine whether a star’s relative motion is towards or away from us, filling the three-dimensional picture.

The query results in just over 1,000 stars in this slice of sky.

Now that we have this data, we can plot them on our BSC reference chart using J2000.0 coordinates. Proper motions are



The Hyades & Pleiades in Taurus by Bob Horton

plotted as line segments originating at the star's astrometric coordinates, pointing in the direction of the angle computed from the RA and Dec components of the proper motion. Since milliarcseconds are too small to display at this scale, an arbitrary multiplier was chosen to make them distinguishable. Finally, the radial velocity is plotted by color. The red line segments indicate stars with a relative velocity moving away from us, and blue represents relative velocity towards us.

The resulting chart, which is limited to visual magnitude 12.5 for clarity, shows that

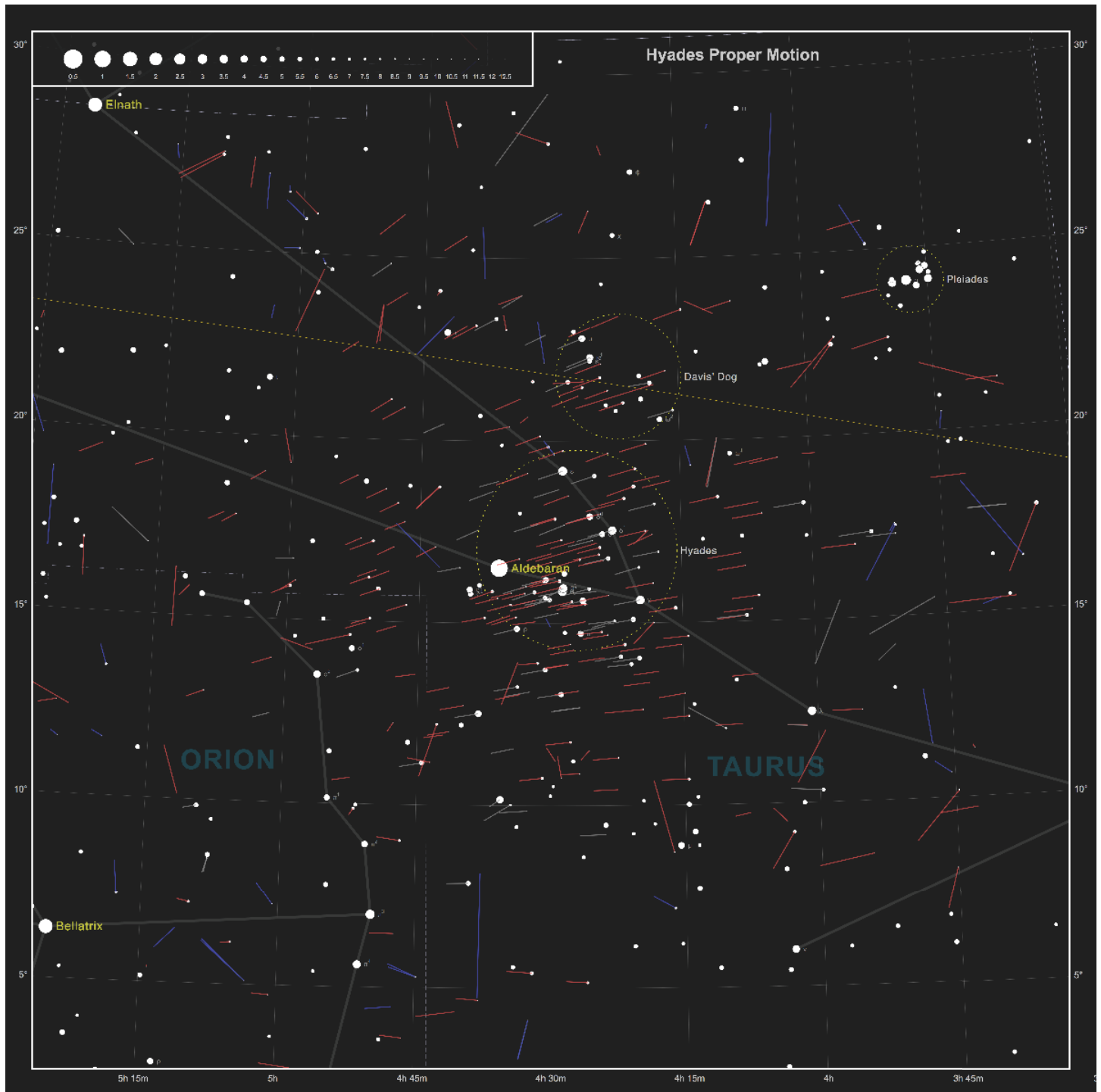
a number of stars are related to the Hyades by means of their similar motion through space, including much of the Davis's Dog asterism, several stars south of the main cluster, and many other stars scattered throughout southern Taurus and northwestern Orion. There are even some stars near the Pleiades, and near the shield of Orion. These stars are moving in a general east-southeast direction, as well as moving away from us at about 40 kilometers per second.

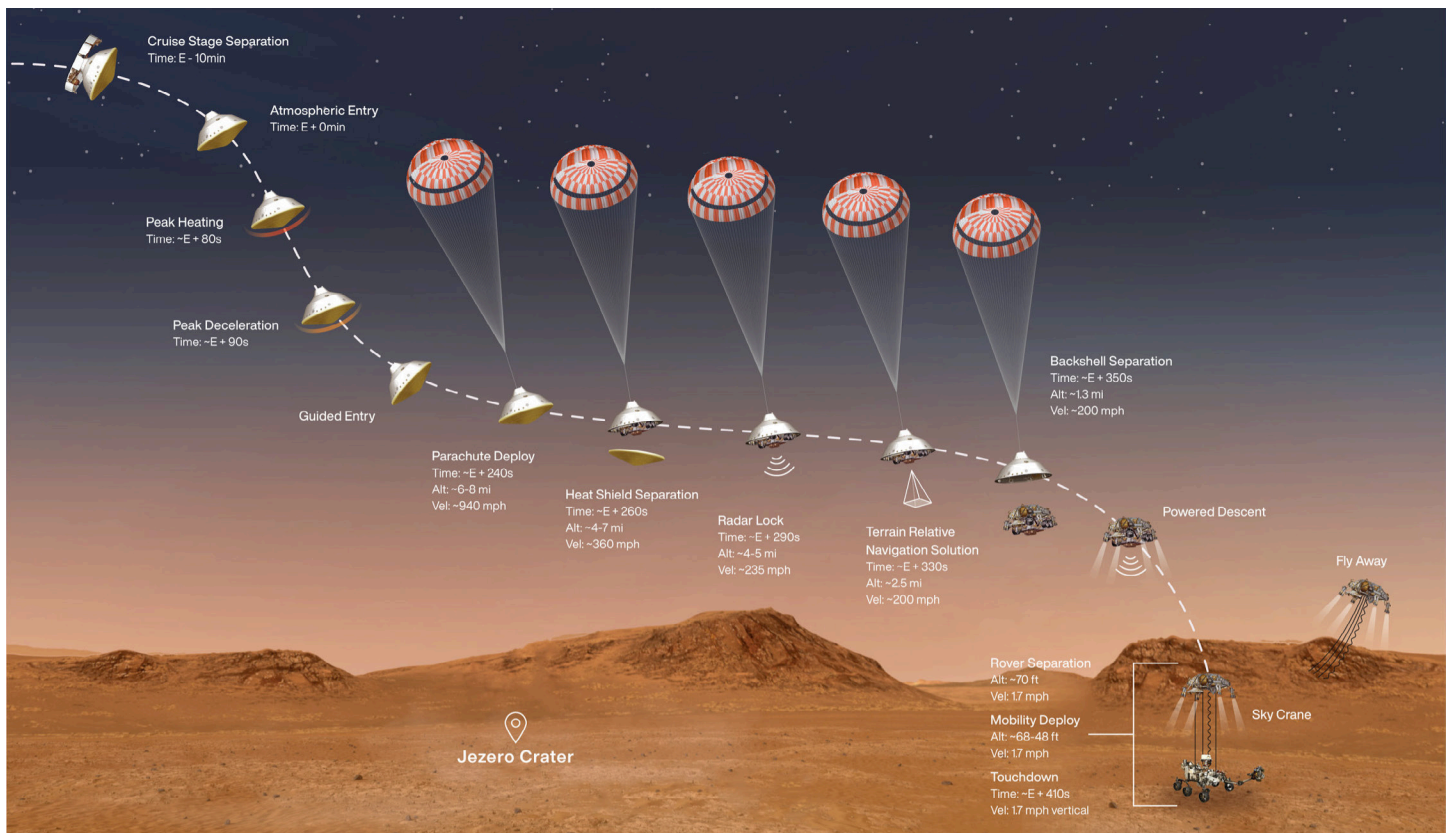
While many of these streams of stars may be outside of what we are traditionally familiar with as the Hyades cluster itself,

visualizing their place in space relative to the stars around them gives us an interesting perspective of our neighborhood of the Milky Way. The next time you gaze up at this corner of the Winter Hexagon, don't forget to explore beyond the familiar stars and asterisms, and remember that the sky is filled with so much beauty and knowledge that is waiting for us each time we look up.



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





NASA Night Sky Notes: Landing On Mars: A Tricky Feat!

By David Prosper

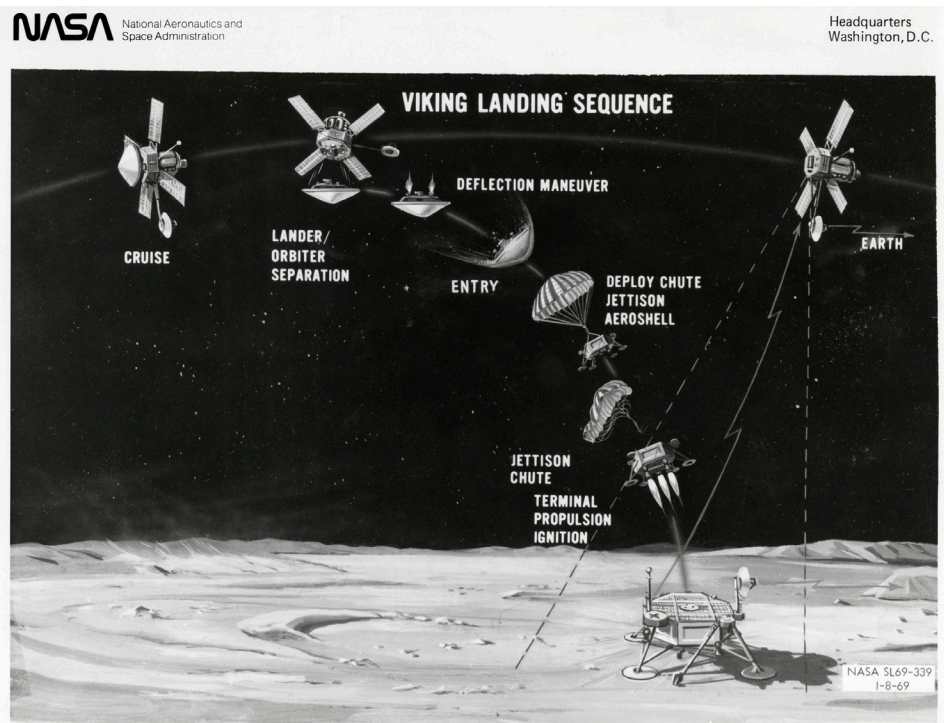
The Perseverance rover and Ingenuity helicopter will land in Mars's Jezero crater on February 18, 2021, NASA's latest mission to explore the red planet. Landing on Mars is an incredibly difficult feat that has challenged engineers for decades: while missions like Curiosity have succeeded, its surface is littered with the wreckage of many failures as well. Why is landing on Mars so difficult?

Mars presents a unique problem to potential landers as it possesses a relatively large mass and a thin, but not insubstantial, atmosphere. The atmosphere is thick enough that spacecraft are stuffed inside a streamlined aeroshell sporting a protective heat shield to prevent burning up upon entry - but that same atmosphere is not thick enough to rely on parachutes alone for a safe

landing, since they can't catch sufficient air to slow down quickly enough. This is even worse for larger explorers like Perseverance, weighing in at 2,260 lbs (1,025 kg). Fortunately, engineers have crafted some inge-

nious landing methods over the decades to allow their spacecraft to survive what is called Entry, Descent, and Landing (EDL).

The Viking landers touched down on Mars in 1976 using heat shields, parachutes,



Illustrations of the Entry, Descent, and Landing (EDL) sequences for Viking in 1976, and Perseverance in 2021. Despite the wide gap between these missions in terms of technology, they both performed their landing maneuvers automatically, since our planets are too far apart to allow Earth-based engineers to control them in real time! (NASA/JPL/Caltech)

and retrorockets. Despite using large parachutes, the large Viking landers fired retrorockets at the end to land at a safe speed. This complex combination has been followed by almost every mission since, but subsequent missions have innovated in the landing segment. The 1997 Mars Pathfinder mission added airbags in conjunction with parachutes and retrorockets to safely bounce its way to a landing on the Martian surface. Then three sturdy “petals” ensured the lander was pushed into an upright position after landing on an ancient floodplain. The Opportunity and Spirit missions used a very similar method to place their rovers on the Martian surface in 2004. Phoenix (2008) and Insight (2018) actually utilized

Viking-style landings. The large and heavy Curiosity rover required extra power at the end to safely land the car-sized rover, and so the daring “Sky Crane” deployment system was successfully used in 2012. After an initial descent using a massive heat shield and parachute, powerful retrorockets finished slowing down the spacecraft to about 2 miles per hour. The Sky Crane then safely lowered the rover down to the Martian surface using a strong cable. Its job done, the Sky Crane then flew off and crash-landed a safe distance away. Having proved the efficacy of the Sky Crane system, NASA will use this same method to attempt a safe landing for Perseverance this month!

You can watch coverage of the Mars Per-

severance landing starting at 11:00 AM PST (2:00 PM EST) on February 18 at nasa.gov/nasalive. Touchdown is expected around 12:55 PM PST (3:55 PM EST). NASA has great resources about the Perseverance Rover and accompanying Ingenuity helicopter on mars.nasa.gov/mars2020. And of course, find out how we plan to land on many different worlds at nasa.gov.



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!

Requiem for a Telescope

by Francine Jackson

Most of us have either lived most of our lives or all of our lives knowing that just off the coast of the U.S., on a small island not far away, existing in a natural sinkhole, was the largest telescope on Earth, the 1,000-foot radio telescope, Arecibo. For 57 years, since 1963, it was the workhorse of terrestrial astronomy, giving us everything from the surfaces of planets and asteroids, the ability to sense pulsar beacons, to rarified gases between galaxies. For those not into science, per se, it also was highlighted in such movies as Contact and Goldeneye.

Within the Puerto Rican community, 130 worked directly at Arecibo, not to mention the indirect financial potential; also, every child on the island experienced a school field trip to the facility, very often creating the birth of future scientists after seeing the workings of the telescope.

Of course, the major question is: What happened? After 57 years, withstanding decades of earthquakes and hurricanes, what would cause this machine to collapse on a relatively calm winter day? Engineers looking into this believe there might have been inherent flaws that slowly came into play; maintenance funding wasn't enough to keep it alive; plus, the addition of the 110-ton Gregorian dome in 1997 could have added to the fragility of the suspension cables. Of course, the fall of this dome onto the surface was the last straw in Arecibo's life.

Fortunately, there are those who are looking forward to the possibility of a rebuild. Many recall the destruction of the

1988 90-meter telescope at Green Bank Observatory, which, through the persuasion of a then influential U.S. senator, made the funding of a replacement happen, resulting in the world's largest steerable radio dish. In Puerto Rico, however, political clout such as that isn't as powerful, but there are many advocates thinking of replacing this now second largest telescope (dwarfed by China's 500-meter Sky Eye) by looking, not only at the National Science Foundation, but also private monies. Already the island's governor has allocated \$8 million to clean up the site and make a replacement design.

Perhaps Arecibo isn't permanently lost, after all. With all that it has contributed to both science and education, it deserves a second coming.

Read the white paper “The Future of the Arecibo Observatory: The Next Generation Arecibo Telescope” at <http://www.naic.edu/ao/ngat>.



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



View of the Arecibo radio telescope prior to collapse, Arecibo Observatory, Puerto Rico by Mario Roberto Durán Ortiz.

Cluster & Nebula in Auriga: NGC 1893 & IC 410

by Glenn Chaple for LVAS

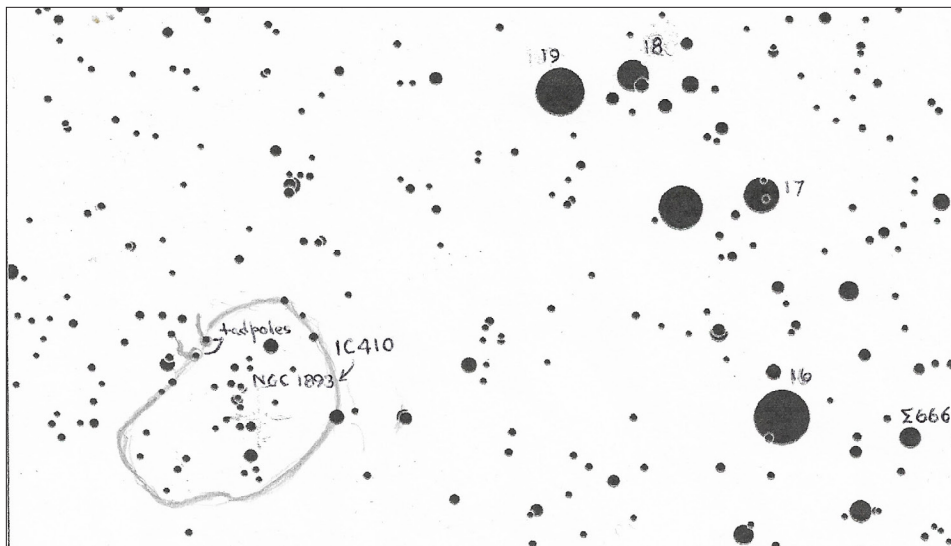
NGC 1893 (Mag: 7.5, Size: 12.0')

IC 410 (Size: 40' X 30')

This month's Observer's Challenge takes us to the emission nebula IC 410 and its embedded open cluster NGC 1893. The cluster is comprised of several dozen members, some twenty of which are magnitude 9 to 12. Most are massive O and B-type stars. They appear relatively faint because the entire system is 12,000 light years away.

It's the surrounding nebulosity that provides the real challenge. A haze surrounding NGC 1893 might be glimpsed with 6 or 8 inch scopes from remote dark-sky locations, but observers working from typical suburban environments will need as much as twice that aperture and possibly an assist from an O-III filter.

A distinctive feature of IC 410 is a pair of gaseous streamers northeast of NGC 1893 that point away from the cluster. Their similarity in appearance to larval frogs gives IC 410 the nick-name the "Tadpoles Nebula."



They appear in the accompanying close-up image of IC 410 taken by ATMoB member Mario Motta. For an ultimate Observer's Challenge, see if you can spot them visually.

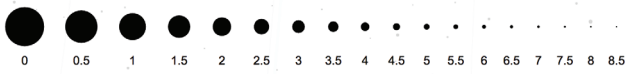
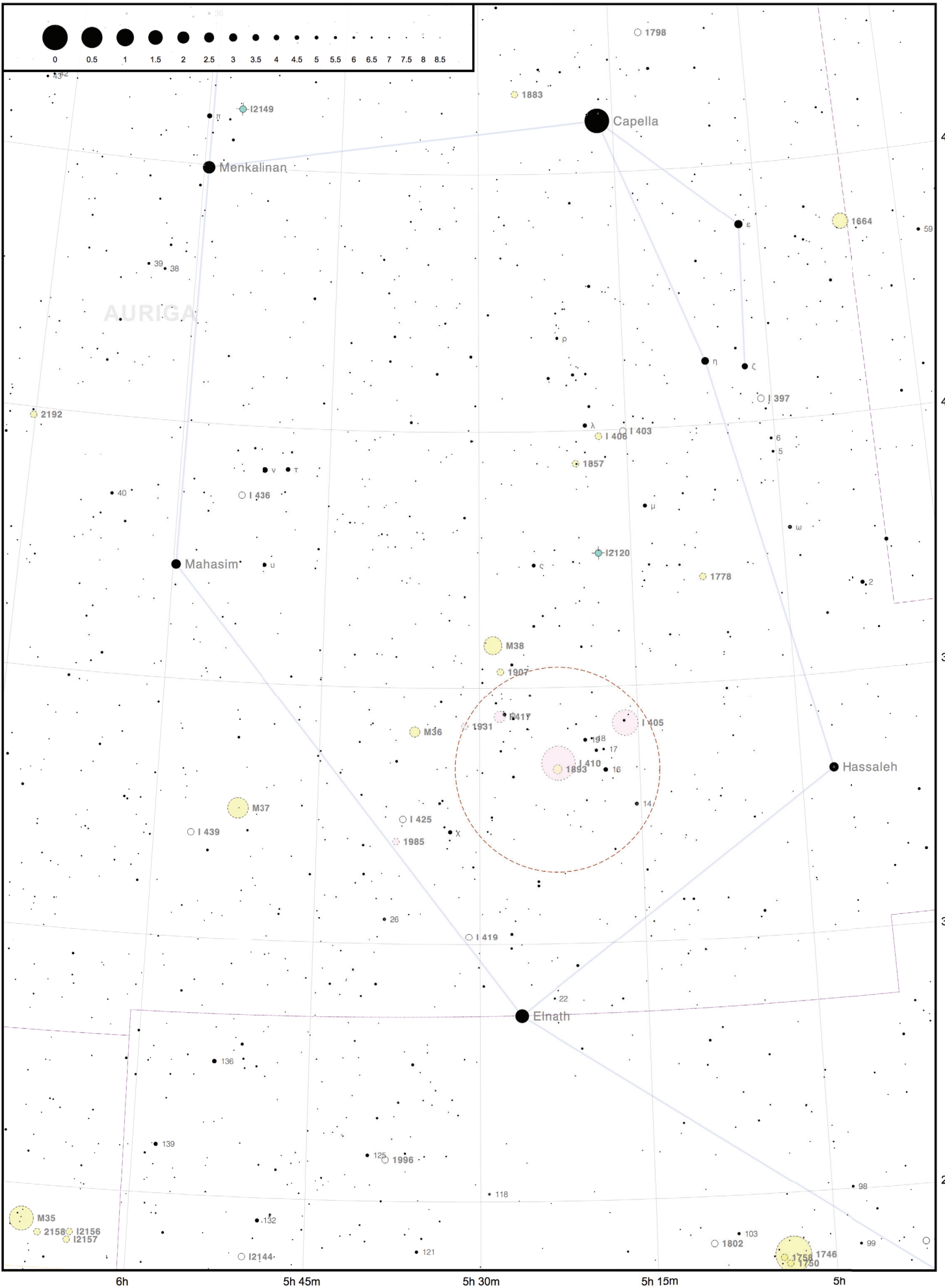
Located at RA 5h22.7m and dec +33°24', this cluster/nebula complex is a quick star-hop from Melotte 31, a stellar group that includes the 5th magnitude star 16 Aurigae. About 20 arc-minutes west of 16 is the near-twin double star Struve 666 (magnitudes 7.85 and 7.89, separation 3.2"). Before moving on to NGC 1893/IC 410, give this little

gem a look-see!

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-complete.



NGC 1893/IC410 close-up image with North up. Image by Mario Motta (ATMoB) 2.5 hours H- α , 1 hour OIII, 1 hour SII.



AURIGA

Capella

Menkalinan

Mahasim'

Elnath

Hassaleh

M35
2158
12156
12157

1758
1750
1746

6h

5h 45m

5h 30m

5h 15m

5h

45°

40°

35°

30°

25°

45°

40°

35°

30°

25°

1798

1883

1664

59

1312

12149

39

38

2192

40

v

τ

1436

u

λ

1406

1403

1857

μ

ω

1778

2

M38

1907

M36

1931

1417

138

17

1410

16

1883

14

1405

1439

M37

1425

1985

x

136

139

132

12144

125

1996

121

118

1802

103

98

99

From the Archives

by Dave Huestis

If you navigate the Skyscrapers website you will come across details about the restoration of our 8-inch Alvan Clark refractor back in 2010.

The project was spearheaded by member Al Hall. In the 75 Years of Skyscrapers (1932 - 2007) history book (available on our website) On page 124 Al enlightens us on his stellar journey from a

nine year old boy interested in astronomy to the achievement of returning Frank Seagrave's telescope to its pristine glory.

During my research through all of our organization's records, I found two interesting historical pieces.

I submit them here for your perusal.

*Allen Hall 14
Box 50 Scott Road
Cumberland, Rhode Island 02864
May 29, 1971*

*Managed
Sky Scapers club
Sandlot Street
North Providence, Rhode Island*

*Dear Sir:
I wanted to get some information about the
Situate Observatory.*

*I will be fourteen years old in June and I have
been interested in astronomy since I was
nine.*

*I was wondering if it would be at all
possible for me to go to the observatory
a few nights this summer.*

*I especially wanted to know if I could go
on the night of August 10, 1971 for the
opposition of Mars when it is at it's peak
of magnitude.*

*As for the other nights this summer I was
wondering if I could go to learn more
about astronomy and maybe be of assistance
to the astronomer you send there.*

*I plan on being an astronomer myself
after I get my Ph.D. and if I could go
this summer it would be a great help
to me later.*

Thank you very much for your time.

Sincerely,

Allen Hall

*For #1 - will put in mailing label for 6 mo
writ 6-5-71 - SH*

Observer AL HALL LIMITING MAG. 5.5 Page 1 of 4 Pages
 DATE AUGUST 12-13, 72 TIME 12:15 TO 5:00 RADIANTS PERSEUS
 LOCATION SEAGRAVE MEMORIAL OBSERVATORY RI FACING ZENITH

TIME	MAG.	DURA.	LENGTH	COLOR	DUR.T.	RADT.	ACC.	PHOTO	FACING	ZENITH	COMMENTS
1 12:15	-1.0	0.6	12°	Y	0.2	PER	9				
2 12:23	0.0	0.5	5°	0		PER	9				
3 12:26	-3.0	2.0	18°	BR	1.0	PER	9		2		TERMINAL BLAST -5
4 12:31	2.0	0.5	10°	W		PER	9				
5 12:31	2.0	0.5	15°	W		PER	9				
6 12:36	1.0	1.0	20°	Y	0.5	PER	9				
7 12:39	0.0	1.0	18°	Y	2.0	PER	9				
8 12:43	2.0	1.0	10°	Y	2.0	PER	9				
9 12:50	-3.0	2.0	12°	B	2.0	PER	9		3		2 TERMINAL BLASTS
10 12:57	1.5	1.0	15°	Y	0.5	PER	9				
11 1:00	1.0	1.0	10°	W	1.0	S	9				
12 1:01	1.5	1.0	20°	B		PER	9				
13 1:02	2.5	0.5	10°	B		PER	7				
14 1:06	2.5	1.0	10°	W		PER	9				
15 1:07	3.0	0.5	8°	W		PER	9				
16 1:08	2.5	1.0	10°	B	0.5	PER	9				
17 1:13	1.0	1.0	12°	Y	0.5	PER	9				
18 1:23	1.0	0.5	8°	Y		PER	9				
19 1:25	0.0	0.7	13°	0	3.0	PER	9		4		
20 1:27	1.5	1.0	10°	B	0.5	PER	9		5		
21 1:31	0.0	1.0	20°	Y	1.0	PER	9				
22 1:31	2.5	0.5	10°	W		S	9				
23 1:34	-0.5	0.5	10°	Y	1.0	PER	9				
24 1:34	-0.5	1.0	12°	Y	2.5	PER	9				
25 1:35	0.0	1.0	15°	B	3.0	PER	9				
26 1:47	1.5	1.0	15°	Y	0.5	PER	9				
27 1:50	0.0	1.0	16°	Y	7.0	PER	9				
28 1:50	-0.5	1.2	20°	B	5.0	PER	9				
29 1:53	-0.5	1.0	18°	Y	0.5	PER	9				
30 1:55	3.0	0.5	7°	W		S	9				
31 1:57	2.0	0.5	10°	W	0.5	S	9				
32 1:57	-1.0	0.5	5°	Y	2.0	PER	9				
33 1:57	2.5	1.0	12°	W	0.5	PER	9				
34 1:59	3.0	1.0	15°	W		PER	9				
35 2:03	2.5	0.6	8°	W		S	9				
36 2:14	2.0	1.0	17°	B	0.5	S	9				
37 2:15	-0.5	1.0	18°	0	1.0	PER	9				
38 2:18	0.0	0.5	10°	B	3.0	PER	9				
39 2:31	0.0	1.0	15°	Y	1.0	PER	9				
40 2:32	1.0	1.0	2°	R		PER	9				

Observer AL HALL LIMITING MAG. 5.5 Page 2 of 4 Pages
 DATE AUGUST 12-13 TIME 12:15 TO 5:00 RADIANTS PERSEUS
 LOCATION SEAGRAVE MEMORIAL OBSERVATORY RI FACING ZENITH

TIME	MAG.	DURA.	LENGTH	COLOR	DUR.T.	RADT.	ACC.	PHOTO	FACING	ZENITH	COMMENTS
1 2:34	1.5	1.0	10°	W	0.5	PER	9				
2 2:42	1.0	1.0	18°	B	0.5	PER	9				
3 2:46	-0.5	1.0	20°	Y	1.0	PER	9				
4 2:51	-0.5	1.0	6°	Y		PER	9				
5 2:54	0.5	1.0	5°	B	1.5	PER	9				
6 2:56	-2.0	1.5	25°	Y	5.0	PER	9				
7 3:04	2.0	0.5	10°	W		S	9				
8 3:04	0.0	1.0	10°	Y	0.5	PER	9				
9 3:17	0.0	0.7	30°	Y	0.5	PER	9				
10 3:18	-0.5	1.0	10°	B	5.0	PER	9				
11 3:20	-0.5	1.5	20°	0	0.5	PER	9				
12 3:24	-2.0	1.0	15°	Y	5.0	PER	9		1		DOUBLE BURST
13 3:25	1.0	0.5	10°	W		PER	9				
14 3:35	-1.0	1.5	20°	Y	2.0	PER	9				
15 3:35	-1.0	1.5	20°	Y	4.0	PER	9				
16 3:36	-2.0	1.0	9°	Y	3.0	PER	9				
17 3:45	2.0	1.0	30°	W		CAP	9				
18 3:57	-1.0	1.5	12°	Y	2.0	PER	9				
19 3:59	-0.5	0.5	0°	BW		PER	9				
20 4:07	-0.5	1.0	25°	B	2.0	PER	9				
21 4:07	-2.0	1.5	20°	Y	1.0	PER	9				
22 4:14	2.0	1.0	7°	W		PER	9				
23 4:16	-1.0	1.5	25°	Y		PER	9				
24 4:17	3.0	0.6	5°	W		S	9				
25 4:20	2.5	0.8	15°	W		PER	9				
26 4:23	2.5	1.0	10°	W		PER	9				
27 4:25	-1.0	1.0	20°	Y	0.5	PER	9				
28 4:30	2.0	0.5	10°	W		PER	9				
29 4:37	-1.0	1.0	20°	Y	1.0	PER	9				
30 4:41	2.0	0.5	10°	B	0.5	PER	9				
31 4:44	1.5	1.0	10°	B	0.5	PER	9				
32 4:46	2.0	0.5	9°	W		PER	9				
33 4:53	0.0	2.5	10°	Y		PER	9				

Hank Renaud Memorial Book Sale

by Dave Huestis

Late last spring I learned that Henry "Hank" Renaud, a valued member of Skyscrapers, passed away in February 2019. Here is a link to his obituary: <https://www.legacy.com/obituaries/woonsocketcall/obituary.aspx?n=henry-a-renaud&pid=191495601&fhid=28478>

His wife Sandi reached out to me to donate Hank's collection of *Sky & Telescope* and *Astronomy* magazines, as well as a small number of observing books, to Skyscrapers. Out of an abundance of caution due to the COVID-19 pandemic, she didn't deliver them to me until mid-December, 2020.

Over the course of three weeks I inventoried them and prepared a list of what was donated. There are over 1400 issues of *S&T* and *Astronomy*, some copies of *The Sky* and *The Telescope*, plus many other publications. Skyscrapers is offering these items for sale to our members. The monies realized from this sale will be recorded as donations in memory of Hank and earmarked for a yet undesignated capital improvement project at the observatory. This action has Sandi's complete approval.

This offering is initially exclusive to Skyscrapers members for a two-week period beginning with the sending of this notice. After two weeks the offer will be extended to the New England astronomical societies. Two weeks later the offering will be post-

ed on Facebook. So don't procrastinate on your selections.

This link (https://drive.google.com/drive/folders/1sPH-m_lIvTiLNYzMdjp-WXo_vpdVCkT4I?usp=sharing) will take you to the Skyscrapers Sales posting where you will find several spreadsheets noting the various inventories with suggested donations. Complete years will be offered as such. There is also a small selection of single issues available. In addition, please see the list of books available. Images of the books are included so you can gauge condition. Multiple year purchases of *S&T* and *Astronomy* totaling \$75 or more will qualify for a 10% discount.

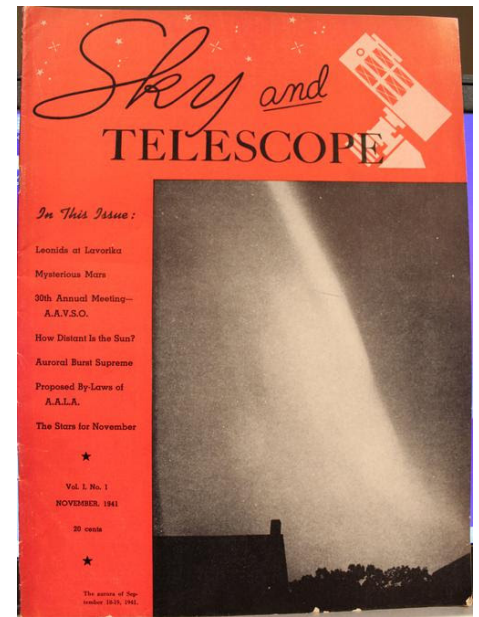
Decide what you want and email me (sales.skyscrapers@gmail.com) with your selection(s). First come, first served. You will be invoiced by Skyscrapers through PayPal. Once payment is received we can arrange pickup.

Since most of our membership is local, you will make an appointment to retrieve your purchased items from my home in Pascoag. We wish to avoid shipping, as multiple years of the magazines are fairly heavy to ship and/or transport to another location. The lists will be updated frequently to reflect stock-on-hand.

As an added bonus, there will be a special auction of the very first issue of *Sky*

& *Telescope* Magazine, November 1941, Volume 1, Number 1. Opening bid is \$15. Bidding begins on February 1 at 12 noon EST and will end at 12 noon on February 8. Place your bid by emailing me. Put AUCTION in the subject line. Each bid will be acknowledged. Bidders will be informed when a higher bid is placed.

Dave Huestis, sales.skyscrapers@gmail.com



January Reports

Minutes-Skyscraper Executive Committee Meeting via Zoom Monday January 11, 2021 at 7PM

Meeting called to order by Steve Siok at 7:05PM

Present: Steve Siok, Kathy Siok, Steve Hubbard, Sue Hubbard, Linda Bergemann, Francine Jackson, Jim Crawford, Bob Janus, Bob Horton, Jim Hendrickson, Jeff Padell, Laura Landon, Ian Dell'Antonio, Bob Napier, Matt Ouellette, Conrad Cardano Total: 16

Finances:

- Insurance- Sue Hubbard reported that a commercial policy with Hartford Insurance is in place from 12/1/2020-12/1/2021. She reviewed the past policy with the agent, Laura with AIM Agency. The policy now accurately covers what is needed for Sky-

scrapers/Seagrave property in North Scituate, RI.

- ◇ Building coverage: Meeting Hall-\$80,000

- ◇ Coverage extension of \$50,000 covers other buildings on the premises.

- ◇ Contents Coverage: \$23,800.

- ◇ Scheduled Contents: Alvin Clarke scope \$75,000.

- ◇ General Liability Coverage: 1 M per occurrence /2M per aggregate-for any property damage or bodily injury occurring on the N. Scituate property.

- ◇ \$5000. Deductible

The new premium is \$1909, which is a savings of \$785.00 in the budgeted amount.

- Budget- Kathy Siok reviewed the budget vs actual to date. Both revenue and expenses were smaller.

A new 6 month CD (0.8%) was opened this year. Net assets are \$28,922.06.

- Bob Janus requested that Skyscrapers put an ad in the Scituate High School Year book. All agreed to place a ½ page ad (\$90), instead of the full page from last year. A design will be provided and Kathy will send a check to the school.

- Steve Siok will appoint auditors to review last year's financial report.

Monthly Meetings:

- Current ZOOM meetings were discussed. While numbers have been stable, it was hoped that more Skyscraper members would attend. Many non-members have been enjoying the meetings.

- Skyscrapers has invited other local astronomy groups to join us and this has been reciprocated by the Springfield Stars

and GHAS (Hartford). Steve Hubbard will contact the ATMs of Boston about their meetings.

• Speakers: Steve Hubbard has speakers in place for Feb/March/April and May 2021 meetings. He is hopeful that we can return to in person meetings soon but that these can continue to be streamed to those who cannot attend.

Membership/Outreach:

- We have 126 paid members
- 12 members have not paid to date
- 26 new members since April 1st (11 since AstroAssembly)
- Junior Members- Steve Siok is currently mentoring two high school students. There was a general discussion about providing activities for our younger members. This will be discussed further.

Proposal by Conrad:

- Because of its age, Conrad proposes that we sell the Meade 12" (and the 20" Tectron) and replace it with a Celestron 11"

Edge HD on a fork mount with accessories. Funds would go to the new scope.

The Trustees have already spoken at length regarding this proposal before it was brought to the Executive Committee. There was some additional discussion at this meeting. Steve Siok appointed a committee to gather more information and recommend a course of action. The committee members will be: Conrad (chair) , Bob Horton, Bob Janus, Jim Crawford, Ian Dell'Antonio.

Dave Huestis request:

- Dave is asking the board for an Ok to sell magazines and books recently donated to Skyscrapers by Sandi Renaud, widow of member Hank Renaud. Dave requested permission to sell this collection and Sandi has approved this action. All agreed to give permission for this sale.

Laura Landon- Dark Skies Resolution in Scituate:

- Laura asked the Executive Committee

if there was any interest in approaching the Town of Scituate to ask about designating it as a Dark Sky Town. She is a board member of Audubon and they would like to partner with us to make this request. Laura and Matt Ouellette will further research this proposal.

Linda Bergemann- Partnership with Element3 Health-platform

- Tabled to the next executive committee meeting.

Other business:

- Jim Crawford, Head Trustee, presented information about dome –roof repairs for the Clark building.

Next Meeting: Steve Siok will email the members of the Executive Committee and ask about what days are better for our meetings. We will hold monthly meetings on a day/time to be determined.

Meeting Adjourned: 8:20PM

Respectfully submitted,
Sue Hubbard-Secretary

Astronomical League Observing Award Update

by Jeff Padell

Currently I am working on two different awards for the Astronomical League, the Open Cluster Award (<https://www.astroleague.org/al/obsclubs/opencluster/opencluster1.html>) and the Planetary Nebula Award (<https://www.astroleague.org/al/obsclubs/planetarynebula/planetnebl.html>). Due to what is visible in the sky at this time of year my Open Cluster search is on hold until later in the year as I have all the clusters on the list currently visible.

However my Planetary Nebula search is in full swing. So far I have 45 of the 90 PN's required for the imaging award. AL gives us a list in RA and DEC order so you can quickly see what is in the sky at any given time. It is one of the several awards that allow remote scopes, I am using the SLOOH scopes. Most of the PN's are in well known catalogs but some you have to schedule by RA and DEC. Tonight I am imaging from the IC catalog, IC2149 and IC2165. I will then have to process all the images and then to submit them you have to do the following

For the visual program you need

- 60 of 110 planetary nebulas
- specifics of the observers site
- date and time
- conditions - seeing transparency etc
- telescope used

- eyepiece and magnification
- filters used
- detailed description of the object - at a minimum
- is central star visible
- is a filter required to observe the PN
- how does the PN respond to different magnifications
- is the object visible by direct vision or averted vision
- a detailed description of the objects appearance
- for the imaging award you need 90 of the 110 objects
- record of the observations must be the same as for the visual certification except instead of a detail description the specifics of the instruments used to make the image are required including number of images (subs) software used etc.
- any process that records an image through a telescope may be used

The AL has an excellent book with pictures of every PN that is on the list for the award and makes a great resource.

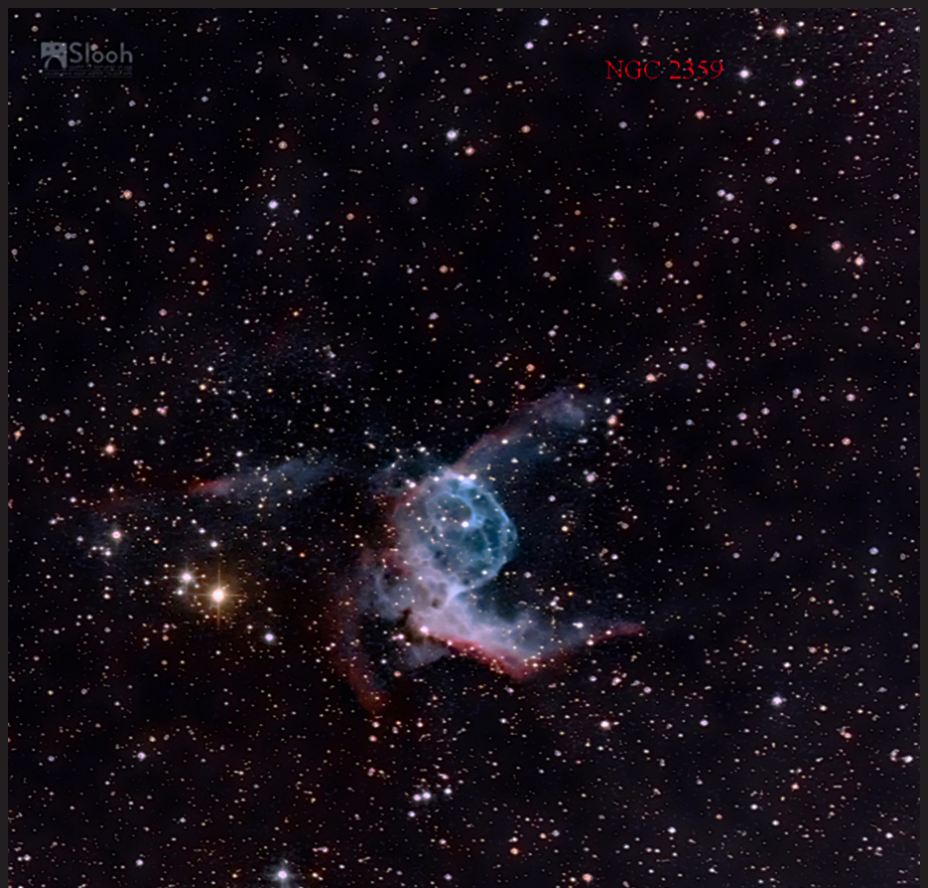
I think everyone should look through the list of awards available to be worked on and try one or more out. They run from observing galaxies and the moon by eye to radio astronomy. <https://www.astroleague.org/al/obsclubs/AlphabeticObserving-Clubs.html>

Astro Pixel Processor & Slooh

by Jeff Padell

I downloaded the free trial of APP, Astro Pixel Processor and tried it on my copy of the nebula NGC 2359 Thor's Helmet. It took me about 3 hours to do the first run with the program as I had to repeat it a couple times to get the color. I will practice more, but I think it is easier than Nebulosity 4 as you don't have to click 2 times on a star in each sub. it does the integration automatically. I am sure I will get better results as I go along. I also used Lightroom/Photoshop/Topas Denoise to finish it off. I think I will buy it.

Here is the new image and the best I did with Nebulosity below it. The new one has more delicate detail.



STARRY SCOOP

Editor: Kaitlynn Goulette



WHAT'S UP

On February 18th, the Mars rover Perseverance (Percy) is scheduled to land on Mars. Percy will land in the Jezero Crater just north of the Martian equator. This crater was chosen as the landing site because it is believed to have once been filled with water. With a mission to find signs of ancient life, Percy will use a drill on its mechanical arm to collect rock samples that will be sent back to Earth. Stored on the belly of the rover, the Ingenuity Helicopter is another exciting piece of technology aboard. I can't wait to see what we learn from this mission.

This month as you look to the western sky, you'll notice Pegasus plunging towards the horizon, dragging Andromeda along with it. These autumn stars are leaving the evening sky as we continue in our orbital path around the sun.

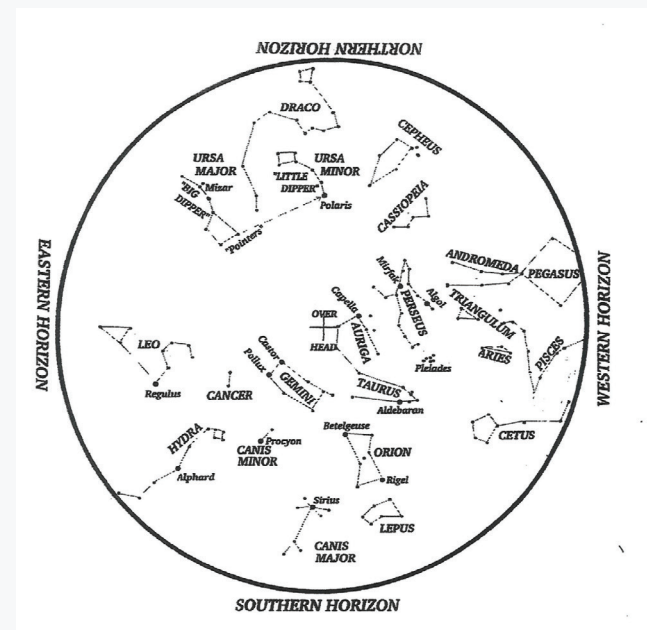
In the southern sky, the winter constellations are at play. Mighty Orion, along with his trusty dogs, continue their perpetual hunt of Taurus the Bull. Don't miss the brightest star in the nighttime sky, Sirius, found in Canis Major. From mid-northern latitudes, Sirius doesn't venture too far above the horizon. Its light travels through more atmosphere than the stars overhead, which causes it to flash all the colors of the rainbow. This scintillation causes many people to mistake it for a UFO.

Looking to the east, you can spot the spring constellation Leo the Lion rising in the sky. This constellation reminds us that spring is not too far off. Regulus, its brightest star, is seen at the bottom of the "backwards question mark" that outlines the lion's head. Regulus is located almost directly on the ecliptic, or path of the sun. The moon, for the most part, travels along the ecliptic and periodically passes in front of Regulus. This is called an occultation. Occultations are not only fun to observe, but are also used for solar system and galactic studies.

FEBRUARY'S SKY

11: New Moon

27: Full Moon



Credit: Roger B. Culver

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

OBSERVATIONS

Recently, I've been enthusiastically hauling out my telescope, knowing that I'll have the opportunity to observe the winter Milky Way. The winter Milky Way is thinner than the summer's because, at this time of year, we are peering at the spiral arms which are located in the opposite direction as the densely populated center of our galaxy. This region is one of my favorites because, along with bright stars, there are many deep-sky treasures to observe.

One of my favorite objects in this area of the sky is the Crab Nebula, M1. This is a supernova remnant from a star-explosion that occurred in 1054. For almost two years, it was visible in the night sky and could even be seen in the daytime for several weeks. Other objects that I have recently enjoyed observing include the Pinwheel Cluster (M36), the Starfish Cluster (M38), NGC 1907, and M37. These galactic clusters were absolutely stunning in my 12-inch Dobsonian telescope.

I haven't ended a single observing session without viewing the Orion Nebula, M42. I varied the magnification between low and high power but spent most of my time observing it at 180x. The bright stars of the Trapezium asterism were like diamonds within the wispy nebula. The details were dazzling as I used the telescope to navigate through this deep-sky spectacle.

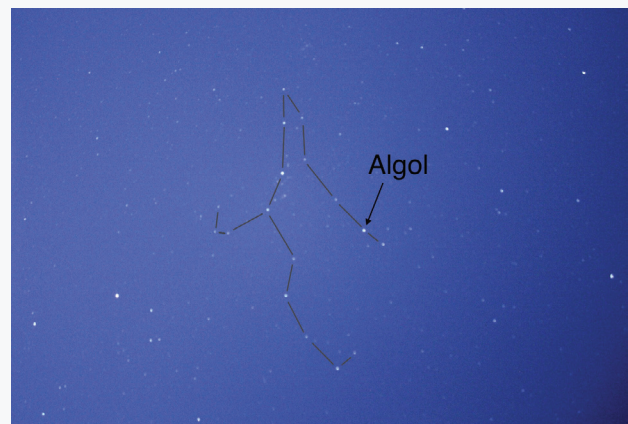


The purpose of the Starry Scoop is to communicate current astronomy and space events. If you want to share your observations or get digital copies of the Starry Scoop, contact starryscoop@gmail.com. The Starry Scoop is now on Facebook. Clear skies!

OBJECT OF THE MONTH

February's featured object is the variable star Beta Persei, also known as Algol. This remarkable star periodically dims to about 1/3 of its normal brightness. This led ancient astronomers to nickname it the "Demon Star." Today, we know that Algol is really two stars in orbit around each other that we see edge-on. Every 2.867 days, as the dimmer star spends about four hours eclipsing the brighter star, Algol's intensity drops. Minimum brightness occurs during mid-eclipse and lasts for about 20 minutes.

Algol is located in the constellation Perseus and is labeled in the star map on page one. Its change in brightness can be easily detected with the unaided eye by comparing it to nearby stars. Good luck!



Algol

Photo by Kaitlynn Goulette



The Orion Nebula

Photo by Ashfield Astrophotography

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