the Skyscraper

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August 2018

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

In This Issue:

Skyscrapers Board Meeting
Monday, August 20, 7pm
All Members Welcome

Phases of the Moon

Last Quarter Moon
August 4 18:18

New Moon
August 11 09:58

First Quarter Moon
August 18 07:49

Full Sturgeon Moon
August 26 11:56

Saturday, August 18, 5:30pm
at Seagrave Observatory

5:30pm Potluck Dinner

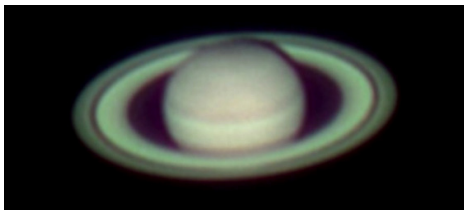
Our annual Pot Luck Dinner will take place at our August meeting. Please bring something to share. The categories are: appetizers, main dishes, side dishes (includes salads), desserts. We will supply water and lemonade, cups, plates etc.

Please RSVP what you plan to bring to Kathy Siok kathys5@cox.net.

7:00pm Member Presentations

Astrometry by Pete Peterson

Abstract: Pete Peterson has been an amateur astronomer for 67 years, starting with a visit to Peep Toad Road in 1950. He has an observatory in Barrington, and one of its missions is to serve the scientific community by providing precision photometric and astrometric data from observations of asteroids and comets. To this end, in 2009 Pete's dome was designated by the Harvard/Smithsonian Minor Planet Center as observatory site I15.



Imaging Saturn by Conrad Cardano

Photographing a planet is by far the hardest thing to do with film (remember film?). With CMOS cameras and software, I can easily get a great image of Saturn (plus Jupiter and Venus). I will demonstrate how I did this with just a 6" reflector.

Starscapes and Constellations - Easy Astrophotography by Bob Horton

Come explore how easy it is to take dramatic photos with minimal equipment, as I provide a few tips on creating beautiful images of starscapes, constellations and more. No telescopes required!

Bob Horton joined Skyscrapers in 1974 and has been an active observer, astrophotographer and a mirror maker for over 40 years. He is the Manager of Astronomical Labs and the Ladd Observatory at Brown University.

President's Message

by Steve Hubbard

It's early August as I write these words and the temperature and humidity is oppressive. It looks like days of unsettled weather ahead too.

We New England astronomers really do suffer due to the weather.

I'm trying not to let photon withdrawal get me down though…

Things always perk up and we still have some great things to look forward to. Mars is still incredibly bright and the dust storm seems to be settling down. The Perseid meteor shower will be here soon AND with a Moon free sky too. We have some great meetings lined up for this month and September and as a bonus, Astroassembly is almost here. If you haven't come to an Astroassembly, you really owe it to yourself to try it. We've been holding this event every year since the 1950's and attracts like minded people from all over. There are some great talks lined up, swap tables, raffles for all sorts of astronomy related items and a terrific evening banquet.

Finally, I hope that once we get past all of this unsettled weather, we can get back to some serious observing again. Late summer and early Fall are ideal times with often clear cool nights and tons of interesting things to see. We will be setting up some member star parties for the next few months, so keep a look out for more information.

Seagrave Memorial Observatory Open Nights

Saturdays st 9:00 pm
8:00 pm beginning August 25

(weather permitting)

Star Parties & Upcoming Events

http://www.theskyscrapers.org/events

Skyscrapers Food Basket

Skyscrapers has now started a food donation program! Just simply bring a caned good or two each time you visit the meeting hall or observatory; place it in the Food Donation box in the hall and they will be donated to our local food bank on a monthly basis.

amazonsmile
You shop. Amazon gives.

https://smile.amazon.com/ch/05-0382371

Skyscrapers Library Borrowing Procedure

The catalog of available items to borrow is available at http://www.theskyscrapers.org/library-procedures, as well as in the meeting hall in proximity to the bookcases.

To borrow an item a member can: 1) review the list online before coming to a meeting 2) review a hard copy of the list on a meeting night.

Once a member chooses an item they can ask Dave Huestis or Weston Ambrose to retrieve it from the bookcase. The member will then sign the item out. This check out procedure will occur only between 7:00pm and 7:30pm on monthly meeting nights held at Seagrave.

Borrowed items should be returned at the next meeting unless other arrangements are made.

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.

Astronomy Nights at River Bend Farm

Ranger Joshua Bell from the Blackstone River Valley National Historical Park has asked Francine Jackson and Jim Hendrickson to help with summer Friday Night Sky Programs at River Bend Farm once again for summer 2018. The park has partnered with local Civil Air Patrol Squadrons to run the program. They'll be explaining basic stuff to visitors like how telescopes work and what it is that they'll be looking at. They'll have some beginner telescopes, but folks should feel free to bring their own. The following tentative dates have been suggested. All dates are Fridays and there are no rain dates. In the event of inclement weather, an indoor presentation will be given.

August 17 - start at 20:00; Sunset at 19:43; Waxing crescent Moon (almost 1st quarter); Venus, Jupiter, Saturn & Mars visible.

September 21 - Blackstone Valley GO Event - Kent Cameron Memorial Sky Gaze - start at 18:30; Sunset at 18:44; Waxing gibbous Moon occults delta Cap (3rd magnitude star) beginning at 19:06; Venus sets early; Jupiter, Saturn & Mars visible.

October 5 - start at 19:00; Sunset at 18:20; Waning crescent Moon not visible in evening; Jupiter sets early; Saturn & Mars visible; dark night for deep sky; best night for Milky Way viewing.

These events have been a lot of fun for us in past years and River Bend Farm is an ideal location with a large, open field away from lights which is ideal for observing. Additionally, we will be dedicating the September 21 night in memory of Kent Cameron, who had hosted night sky events at River Bend Farm for over 20 years. For more information, contact Jim Hendrickson at hendrickson.jim@gmail.com, Francine Jackson at Francine_Jackson@brown.edu or Josh Bell at joshua_bell@nps.gov

River Bend Farm Visitor Center
287 Oak Street, Uxbridge MA 01569

Picture Perfect for the Perseids

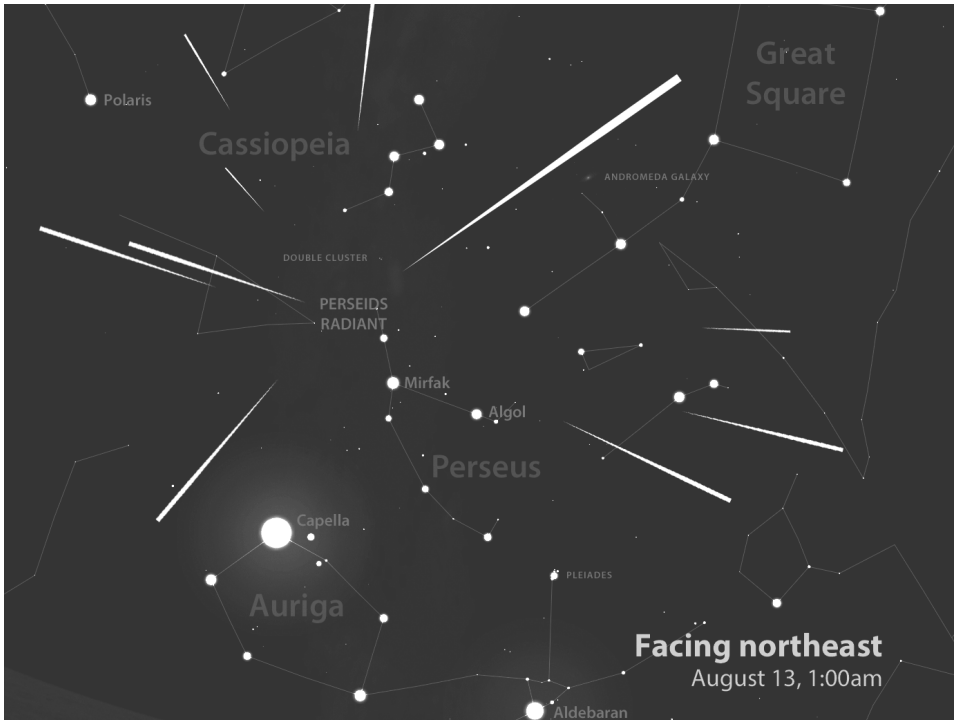
by Dave Huestis

If the sky is clear on the night of August 12-13 (Sunday night – Monday morning) I suggest you plan on selecting a dark sky location from which to observe the annual Perseid meteor shower. The Perseids are the second best display of shooting stars, ranking behind the December Geminids. Despite that status, this year's favorable conditions may provide stargazers of all interest levels with anywhere from 60-120 meteors per hour.

Contributing to our good fortune in 2018 is a New Moon occurring the day before on the 11th. Therefore moonlight will not interfere with observing as many meteors as possible once you seclude yourself away from light pollution sources.

The Perseids are so named because they appear to radiate from an area of sky, called the radiant point, in the constellation Perseus. That star pattern is well up in the northeast sky after midnight. (See accompanying finder chart.) If you can locate a pattern of stars that looks like a sideways "M" or "W" (that's Cassiopeia), Perseus is below it so you're looking in the correct direction. You know you've seen a Perseid if you can trace the path of a meteor back to the radiant point.

The particles comprising the shower are the remnants of Comet 109P/Swift-Tuttle that were stripped off the comet's surface and deposited in "streams" throughout its orbit about the Sun. When the Earth passes through such a stream we experience a display of shooting stars. The Perseids are about the size of a thumb nail as they plunge into our atmosphere at 134,222 miles per hour (37 miles per second) and disintegrate. It is also a colorful display, producing shooting stars that are usually green, red or orange.



In addition, the best time to observe the Perseids is after midnight. As Perseus rises higher into the sky 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. And some members of this shower are bright and often produce brilliant exploding fireballs. Fireballs may be more prevalent as we approach morning twilight. Why? At that time we will be hitting the meteor stream head-on!

With such promising prospects for this year's annual Perseid meteor shower I think the odds are in our favor that we will observe more shooting stars than fireflies. Just hope the weather will cooperate.

Good luck and 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

Mars Mania 2018

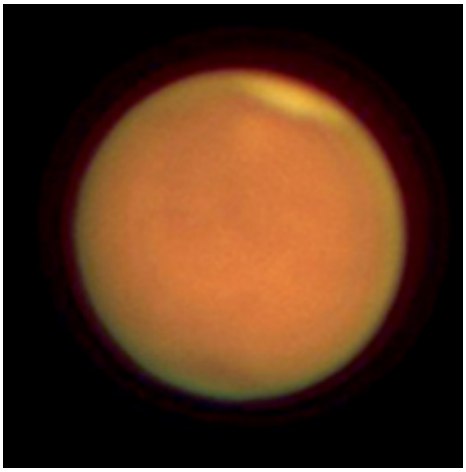
by Dave Huestis

Amateur astronomers have been anxiously awaiting the closest approach of Mars to the Earth since 2003. On July 31 the Earth-Mars distance will be only 35,785,537 miles. The two planetary neighbors won't be this close again until 2035, so I'm sure the news media will be hyping the event. It's been over two years since I've written about Mars. Why? As it is with most things astronomical, events in our solar system occur in a cyclic manner. Earth and Mars have a close encounter every 26 months. During the last few months the Earth has been catching up to Mars in our respective orbits, since the Earth orbits the Sun (one year) in less time than Mars does (1.88 years). So the Earth effectively laps Mars. Unfortunately not all Mars' close encounters are favorable ones. That fact is due to the eccentricity of Mars' elliptical orbit and its distance from the Sun. However, this year's close encounter is going to be splendid!

For this article I am not going to recount the history of Mars observations or spacecraft explorations other than to say the initial accounts of possible "canals" on Mars at the end of the 19th century captured our imagination and most assuredly hastened our spacecraft exploration of this desolate world. If you would like some historical background, visit this link on the Skyscrapers web site: http://www.theskyscrapers.org/mars-past-present-and-future.

When I'm able to show a young child a great view of Mars through Seagrave Observatory's 8-inch Alvan Clark refractor telescope or Ladd Observatory's 12-inch Brashear refractor, I often wonder if that young person may be the first human to set foot upon Mars' alien landscape. This explorer will be able to step up to a rock outcropping and pick away at the formation hoping to discover evidence of past life. (Much like I imagined doing as I watched the fantastic images transmitted to Earth from the Mars rovers.)

This brief Mars observing guide will help you to discern and appreciate the planetary detail a telescope may show you of this neighboring world. Considering how close our two worlds will be, even a small 2.4 inch refractor should show some surface features, including the South Polar Cap and a few dark markings. And if seeing conditions are perfect, one should be able to "crank up" the magnification to coax additional detail out of the image. Larger aperture telescopes will reveal increasing detail.



Mars on August 5 by Steve Hubbard using a 6-inch f/10 refractor.

You can begin to observe Mars as soon as you read this article. Due to a variety of publication dates, you may have missed the close approach (July 31), but believe me the view of Mars will still be marvelous. Be sure to check out the free public observing sessions at the local observatories. Plans are being developed for special Mars observing programs. You can use what you learn here to enhance that experience, or better still, to explore Mars with your own telescope.

Mars will not be hard to locate in the sky. On the night of closest approach Mars will rise above the southeast horizon after sunset. You can't miss its distinct bright pumpkin-orange color. You should wait for it to climb higher into the sky and out of any horizon haze and turbulence. By 10:00 pm Mars will be almost 14 degrees above the horizon and awaiting your scrutiny among the stars of the constellation Capricornus. Later in August it moves into neighboring Sagittarius for a couple of weeks before moving back across the border into Capricornus once again.

Once you focus in on Mars with a telescope, closer inspection will reveal the surface color to be more peach-like. The second detail that should catch your eye will be the South Polar Cap (SPC). It's a fairly bright white feature that can be easily seen because Mars' south pole is currently tilted 11 degrees towards the Earth.

Spring began in Mars' southern hemisphere on May 22, so the SPC has had some time to melt. Mars' southern hemisphere summer doesn't occur until October 16, so as time passes an observer should be able to notice the SPC shrinking and breaking up. Despite Mars closeness to the Earth this year, the planet can still appear to be fairly small. Wait for steady seeing conditions to observe as much detail as possible. The SPC will continue to shrink as the Martian summer progresses, while the Earth/Mars distance will be increasing and the image size will be decreasing as the Earth pulls out ahead of Mars in our respective orbits.

(While the North Polar Cap is tilted away from the Earth, you may see hints of the North Polar Hood, bright clouds around the north polar cap.)

While the SPC should be rather apparent, the rest of Mars will appear as a peach-colored "beach ball". As you more carefully scan the planet you should begin to notice several dark surface features. These markings are the underlying rock exposed by the shifting sands during intense dust storms. The amount of detail seen will depend upon the size of your telescope and its magnification. However, atmospheric conditions above your observing location will be the definitive limiting factor.

One should easily observe a dark feature like Syrtis Major, once thought to be a plain, but now recognized as a low profile shield volcano. It looks similar to the Earth's Indian subcontinent. In addition, Hellas Basin, a bright feature which lies between Syrtis Major and the SPC, is a large meteor impact basin about 1,400 miles in diameter and about 4.5 miles deep.

Remember, you don't have to know the names of the features you glimpse. Just simply enjoy the view of any surface feature you can observe. However, if you wish to identify some of Mars' dark and bright surface features you can use a utility called Mars Profiler provided online by Sky and Telescope magazine (http://www.skyandtelescope.com/observing/interactive-sky-watching-tools/mars-which-side-is-visible/). The Mars Profiler app opens with south at the top. You can toggle the tabs to set the app to the view your telescope provides. You'll need to know if your telescope optics present Mars with south at the top or bottom of the image. Left or right orientation is less crucial for identifying features.

Also please keep in mind that Mars rotates once in 24 hours and 38 minutes. That means if you observe a feature at a specific location at a specific time on a given night, you'll have to wait an additional 38 minutes each successive night for it to be at the same spot, since the Earth rotates once every 24 hours.

Mars is also noted for producing dust storms that can globally enshroud the planet. When this occurs the dust can prevent any of its surface features from being observed. These storms are active when Mars is at perihelion (closest to the Sun), and that is now. Also, they are most prevalent in the southern hemisphere (also facing us now) and as summer in that hemisphere begins on October 16. So if you start to lose detail on the Martian surface look on the web to see if a dust storm is in progress. (While I was writing this column during mid-June, a large dust storm was intensifying on Mars. If it becomes one of global proportions, our view of any surface features may be compromised.)

In conclusion, be patient when observing Mars. The planet's disk will still be fairly small. Wait for steady seeing conditions. Don't try observing Mars if the stars are twinkling. Twinkle twinkle little star may be a nice child's poem, but if the stars are twinkling that indicates atmospheric turbulence. You'd be better off watching the movie The Martian. Be patient while observing Mars. (Note: Contributing to bad seeing is the fact that Mars will traverse a low arc across our southern New England skies during this close encounter.)

Drag out those telescopes from the basement, attic or garage and treat yourself and your children to the best views of Mars we'll experience until 2035. One day they or your grandchildren may set foot upon this exciting landscape. Take a knowledgeable glimpse of an alien world that inspired generations of astronomers and science fiction writers alike to ponder the existence of Martian life-forms.

If you do not own a telescope you should make every effort to visit the observatories throughout Rhode Island to experience the best views of Mars. Seagrave Memorial Observatory in North Scituate (http://www.theskyscrapers.org) is open every clear Saturday night for observing. Ladd Observatory (http://www.brown.edu/Departments/Physics/Ladd/) in Providence is scheduled to reopen Tuesday, July 10, and every clear Tuesday thereafter. The Margaret M. Jacoby Observatory at the CCRI Knight Campus in Warwick (http://www.ccri.edu/physics/observatory.htm) is open every clear Thursday night. Also consider visiting Frosty Drew Observatory (http://www.frostydrew.org/) in Charlestown on every clear Friday night. Please visit the respective websites for details. These observing sessions are free and open to the public.

Become a part of Mars mania.

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

The Incredible Abilities of the Lowly Pigeon

by Francine Jackson

If you were to think of the bird that you hate the most, most likely your first choice would be the pigeon. Often referred to as the "rat of the sky," these creatures are surprisingly quite amazing, both in their physical features and their intellect.

We've all heard their distinctive sound, a subtle "Coo," not surprising, as they are part of the family Columbidae, which includes doves. Notice the root word, as in the constellation Columba, the Dove, found just below Lepus and Canis Major. But, these birds are amazing, as described in the latest issue of Discover Magazine.

First of all, pigeons have been domesticated for over 5,000 years, as documented in both Mesopotamian and Egyptian writings. Their usefulness was not only as pets, but they were also raised for food and for sport. Soon, they became known for their ability to carry messages and to return home with virtually no trouble.

In the 1800s, news organizations soon learned using pigeons to carry "late breaking" stories by pigeon was faster than any means of transportation at that time, and more reliable than telegraph messages. In the 1900s, pigeons were known to carry messages to headquarters from the front lines during both World Wars. It is even known that during World War II, pigeons had cameras strapped to their backs for imaging the war effort. Unfortunately, recently, pigeons have been intercepted carrying backpacks full of drugs across international borders.

Their intelligence has been widely studied. Pigeons are one of the few animals capable of passing the "mirror test," that is, they can recognize their own reflection. They can recognize such shapes as the letters of the alphabet, and can distinguish different human faces. And, now, pigeons are being trained to spot cancer in medical images, based on their wartime ability to detect military targets.

The question is how are these avians able to do all these, while still finding their way home? It has been known for decades that birds do have the ability to follow the stars; planetarium studies have confirmed this many times. However, it appears pigeons do rise above this, as they are believed to also follow the Earth's magnetic field; in other words, they have a built-in compass. They also have been known to use their sensitive hearing and sense of smell to create their own landmarks and follow known roads. And, of course, researchers have determined they can also use our Sun. For birds that we often ignore, or just shoo away from us, it appears, as stated in Discover Magazine, pigeons are "really coo."

Francine Jackson is Skyscrapers Public Relations Spokesperson, writes the weekly newsletter for Ladd Observatory and serves as planetarian at the University of Rhode Island. See more at http://theskyscrapers.org/francine-jackson

Planetary Nebula in Scutum

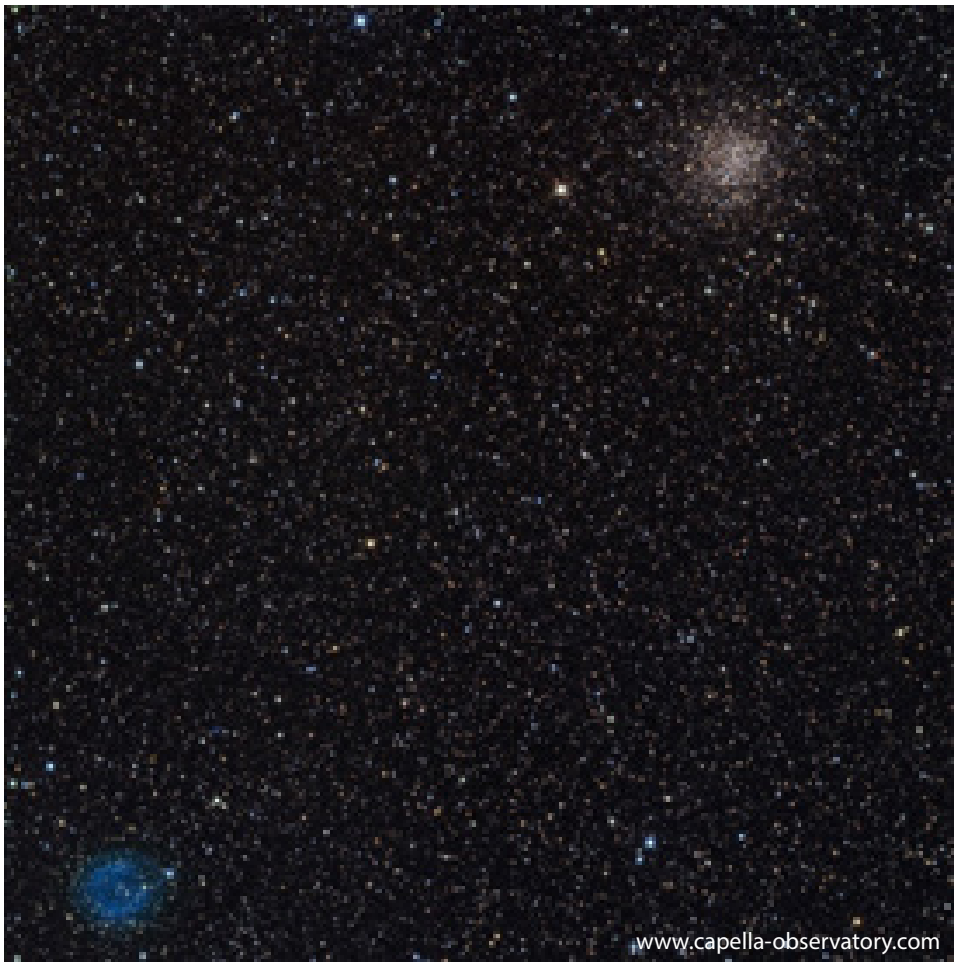
IC 1295

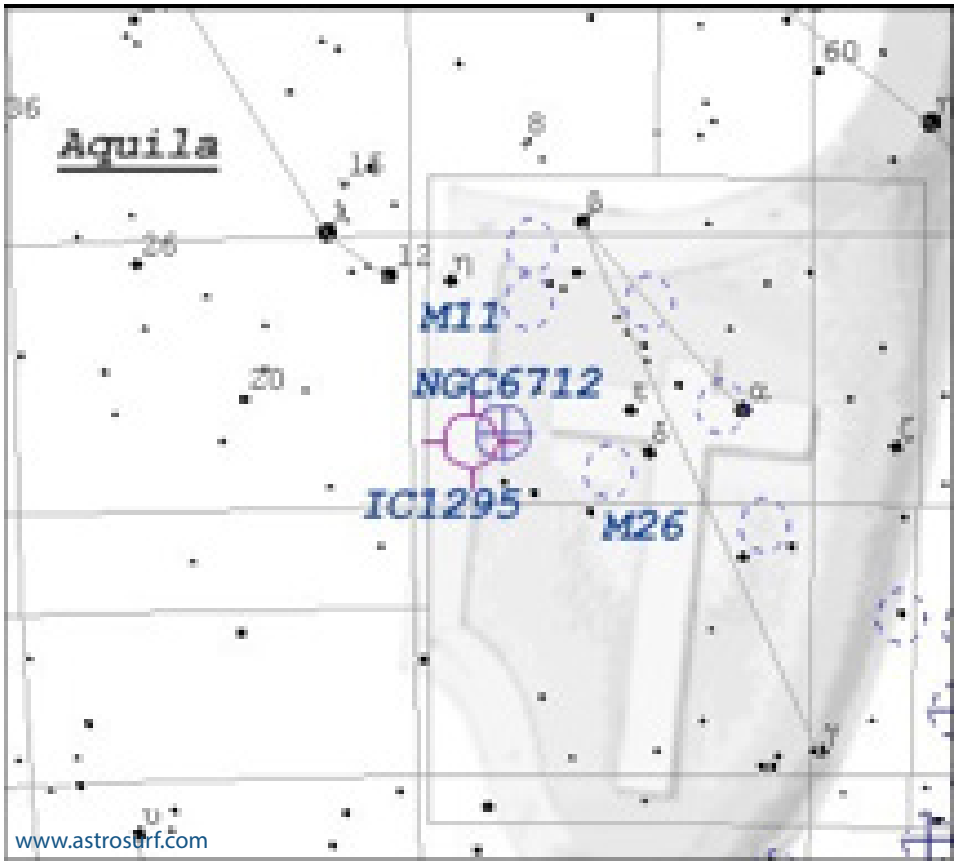
by Glenn Chaple for LVAS

(Mag. 12.7; Size 1.7′ X 1.4′)

This little-known planetary nebula was discovered by American astronomer/mathematician Truman Henry Safford on August 28, 1867. Its listed magnitude of 12.7 might cause backyard astronomers to shy away, but IC 1295 has a high surface brightness and may be glimpsed from dark-sky locations with telescopes as small as 6 inches in aperture. An OIII filter and moderately high magnification are essential if you want to visually detect IC 1295, let alone pick out any detail. A bonus is the presence, just 0.4 degrees west-northwest, of the 8th magnitude globular cluster NGC 6712.

Your challenges: What is the smallest aperture with which IC 1295 can be seen? Can you detect any detail when using a large-aperture scope? Finally, can you see (or image) the 17th magnitude central star?





The purpose of the LVAS Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone that is interested, and if you are able to contribute notes, drawings, or photographs, the LVAS will be happy to include them in our monthly summary. If you would like to contribute material, submit your observing notes, sketches, and/or images to either Roger Ivester (rogerivester@me.com) or Fred Rayworth (queex@embarqmail.com). To find out more about the LVAS Observer's Challenge or access past reports, log on to

The Best Meteor Shower of the Year

By Jane Houston Jones and Jessica Stoller-Conrad

If you're a fan of meteor showers, August is going to be an exciting month! The Perseid meteor shower is the best of the year, and in 2018, the peak viewing time for the shower is on a dark, moonless night—perfect for spotting meteors.

The best time to look for meteors during this year's Perseid shower is at the peak, from 4 p.m. EDT on Aug. 12 until 4 a.m. EDT on the Aug. 13. Because the new Moon falls on the peak night, the days before and after the peak will also provide very dark skies for viewing meteors. On the days surrounding the peak, the best time to view the showers is from a few hours after twilight until dawn.

Meteors come from leftover comet particles and bits from broken asteroids. When comets come around the Sun, they leave a dusty trail behind them. Every year Earth passes through these debris trails, which allows the bits to collide with our atmosphere and disintegrate to create fiery and colorful streaks in the sky—called meteors.

The comet that creates the Perseid meteor shower—a comet called Swift-Tuttle—has a very wide trail of cometary dust. It's so wide that it takes Earth more than three weeks to plow all the way through. Because of this wide trail, the Perseids have a longer peak viewing window than many other meteor showers throughout the year.

In fact, this year you should be able to see some meteors from July 17 to Aug. 24. The rates of meteors will increase during the weeks before Aug. 12 and decrease after Aug. 13. Observers should be able to see between 60 and 70 meteors per hour at the shower's peak.

The Perseids appear to radiate from the constellation Perseus, which is where we get the name for this shower. Perseus is visible in the northern sky soon after sunset this time of year. Observers in mid-northern latitudes will have the best views.

However, you don't have to look directly at the constellation Perseus to see meteors. You can look anywhere you want to; 90 degrees left or right of Perseus, or even directly overhead, are all good choices.

While you're watching the sky for meteors this month, you'll also see a parade of the planets Venus, Mars, Jupiter and Saturn—and the Milky Way also continues to grace the evening sky. In next month's article, we'll take a late summer stroll through the Milky Way. No telescope or binoculars required!

Catch up on all of NASA's current—and future—missions at www.nasa.gov

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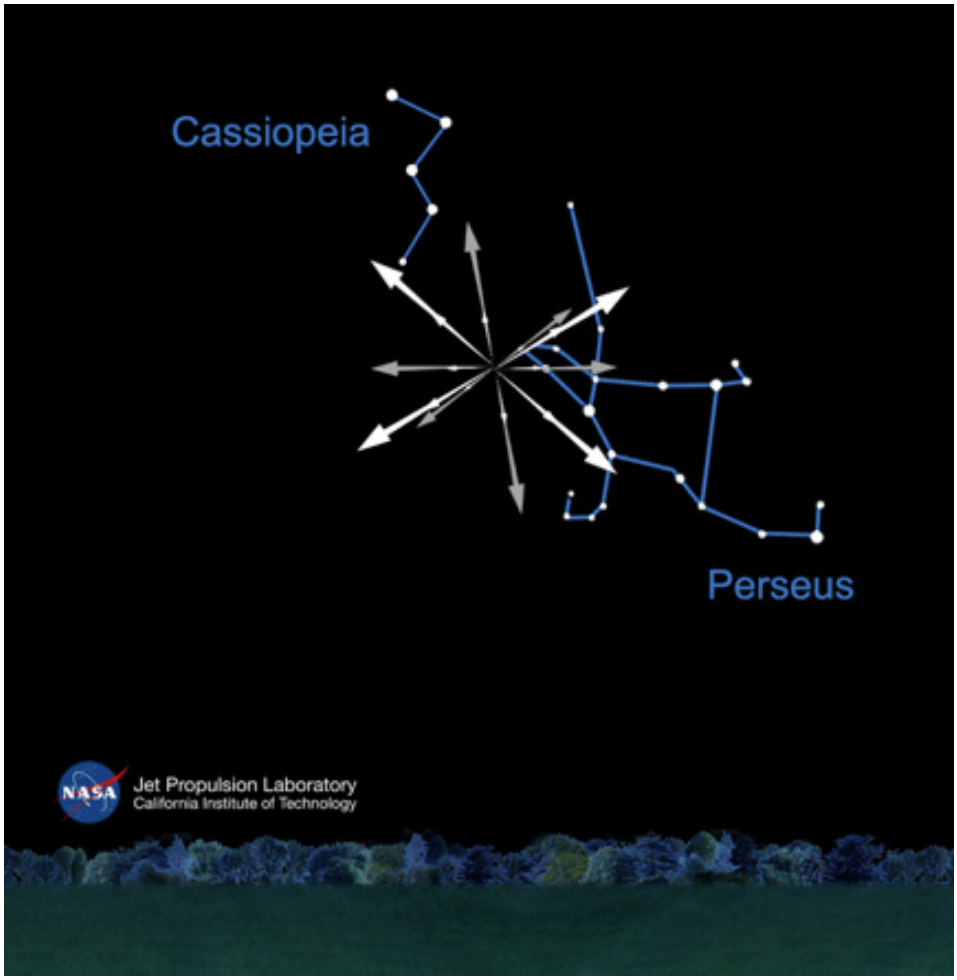

The Perseid meteor showers appear to radiate from the constellation Perseus. Perseus is visible in the northern sky soon after sunset this time of year. Credit: NASA/JPL-Caltech

The Sun, Moon & Planets in August

This table contains the ephemeris of the objects in the Solar System for each Saturday night in August 2018. 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	**4**	8 56.2	17 18.2	Cnc	-26.8	1891.6	-	-	-	1.01	05:42	12:52	20:01
	11	9 22.9	15 20.5	Leo	-26.8	1893.5	-	-	-	1.01	05:50	12:51	19:52
	18	9 49.2	13 10.7	Leo	-26.8	1895.9	-	-	-	1.01	05:57	12:50	19:42
	25	10 15.1	10 50.7	Leo	-26.8	1898.6	-	-	-	1.01	06:04	12:48	19:31
Moon	**4**	2 09.0	6 35.5	Cet	-12	1843.3	99° W	58	-	-	23:42	06:23	13:14
	11	8 57.3	16 54.9	Cnc	-6.4	2001.3	6° W	0	-	-	05:52	13:10	20:18
	18	15 19.4	-13 54.5	Lib	-11.8	1851.5	86° E	47	-	-	13:54	19:06	00:12
	25	21 14.5	-17 45.1	Cap	-12.5	1778.5	164° E	98	-	-	19:21	00:38	06:00
Mercury	**4**	9 24.6	10 06.7	Leo	3.0	11.3	10° E	4	0.44	0.60	06:37	13:16	19:48
	11	9 04.3	11 56.6	Cnc	3.5	10.9	6° W	2	0.41	0.62	05:43	12:28	19:14
	18	8 52.8	14 23.1	Cnc	1.8	9.5	14° W	12	0.37	0.71	04:55	11:51	18:47
	25	9 03.4	15 46.6	Cnc	0.2	7.8	18° W	36	0.33	0.87	04:34	11:36	18:38
Venus	**4**	11 48.4	1 02.0	Vir	-4.2	21.3	45° E	56	0.73	0.79	09:38	15:44	21:49
	11	12 13.6	-2 24.1	Vir	-4.2	22.9	46° E	52	0.73	0.74	09:48	15:41	21:34
	18	12 37.7	-5 46.7	Vir	-4.3	24.8	46° E	49	0.73	0.68	09:57	15:38	21:18
	25	13 00.6	-9 02.1	Vir	-4.3	27.0	46° E	45	0.73	0.63	10:04	15:33	21:01
Mars	**4**	20 23.8	-26 06.6	Cap	-2.9	24.3	168° E	99	1.39	0.39	20:00	00:19	04:37
	11	20 16.7	-26 25.6	Cap	-2.8	23.8	161° E	99	1.39	0.39	19:22	23:39	03:56
	18	20 11.4	-26 29.8	Cap	-2.5	23.0	153° E	97	1.39	0.41	18:50	23:07	03:24
	25	20 08.6	-26 19.8	Cap	-2.3	22.0	146° E	96	1.39	0.43	18:19	22:37	02:55
1 Ceres	**4**	11 19.0	13 10.6	Leo	8.8	0.4	35° E	99	2.57	3.34	08:22	15:13	22:03
	11	11 30.2	11 50.8	Leo	8.8	0.4	31° E	99	2.58	3.39	08:11	14:57	21:42
	18	11 41.4	10 30.3	Leo	8.8	0.4	28° E	99	2.58	3.43	08:00	14:40	21:20
	25	11 52.6	9 09.4	Vir	8.7	0.4	24° E	99	2.58	3.47	07:49	14:24	20:59
Jupiter	**4**	14 48.2	-15 11.4	Lib	-1.9	37.5	93° E	99	5.39	5.25	13:34	18:41	23:47
	11	14 50.4	-15 22.8	Lib	-1.9	36.7	86° E	99	5.39	5.35	13:10	18:15	23:21
	18	14 53.1	-15 36.3	Lib	-1.9	36.0	80° E	99	5.39	5.46	12:46	17:50	22:55
	25	14 56.2	-15 51.6	Lib	-1.8	35.3	74° E	99	5.38	5.57	12:23	17:26	22:30
Saturn	**4**	18 14.8	-22 36.5	Sgr	0.2	17.9	142° E	100	10.06	9.25	17:31	22:06	02:41
	11	18 13.4	-22 37.9	Sgr	0.2	17.8	135° E	100	10.06	9.32	17:02	21:37	02:12
	18	18 12.3	-22 39.3	Sgr	0.3	17.6	128° E	100	10.06	9.41	16:34	21:09	01:44
	25	18 11.6	-22 40.5	Sgr	0.3	17.4	121° E	100	10.06	9.51	16:06	20:40	01:15
Uranus	**4**	2 02.2	11 50.7	Ari	5.8	3.6	99° W	100	19.88	19.69	23:11	05:56	12:42
	11	2 02.2	11 50.6	Ari	5.8	3.6	106° W	100	19.88	19.58	22:44	05:29	12:14
	18	2 02.1	11 49.7	Ari	5.8	3.6	113° W	100	19.88	19.47	22:16	05:01	11:46
	25	2 01.8	11 47.9	Ari	5.7	3.6	119° W	100	19.88	19.36	21:48	04:33	11:18
Neptune	**4**	23 09.9	-6 26.8	Aqr	7.8	2.3	146° W	100	29.94	29.10	21:26	03:05	08:43
	11	23 09.3	-6 30.6	Aqr	7.8	2.4	152° W	100	29.94	29.04	20:58	02:36	08:15
	18	23 08.7	-6 34.7	Aqr	7.8	2.4	159° W	100	29.94	28.99	20:30	02:08	07:47
	25	23 08.0	-6 39.1	Aqr	7.8	2.4	166° W	100	29.94	28.96	20:02	01:40	07:18
Pluto	**4**	19 24.3	-21 53.4	Sgr	14.2	0.3	158° E	100	33.62	32.67	18:37	23:16	03:54
	11	19 23.6	-21 55.4	Sgr	14.2	0.3	151° E	100	33.62	32.73	18:09	22:47	03:25
	18	19 23.1	-21 57.2	Sgr	14.2	0.3	144° E	100	33.62	32.80	17:41	22:19	02:57
	25	19 22.5	-21 59.0	Sgr	14.2	0.2	137° E	100	33.63	32.88	17:13	21:51	02:29

Lunar mosaic by Jeff Padell using ASI290mm mini on a Celestron XLT102 f/6.3 refractor.

Proposed Changes to Constitution & Bylaws

Constitution

ARTICLE IV: MEMBERSHIP

§2 An applicant for Junior, Regular, Family, and Senior shall submit the standard form of Membership application together with noted dues, shall be proposed by an existing member at a regular meeting, and shall become a member upon receiving a favorable majority vote at a subsequent regular meeting of the Society.

§8 Membership Dues in this Society are as listed within the Membership Application.

Bylaws

ARTICLE I: FISCAL YEAR & DUES

§2 Dues are payable on April 1 for the dues year then beginning. The annual dues shall be set out in the Membership Application (revised annually). Persons applying for membership during the months of April through December pay the above stated annual dues for the current fiscal year (April – March). Persons applying for membership during the months of January through March pay the above stated annual dues, but their membership extends through the next fiscal year. Persons making donations over and above their membership dues shall be called Contributing Members. Four distinguished categories of Contributing Members shall be designated: Sponsors ($60); Supporters ($100); Patrons ($250); and Benefactors ($500).

ARTICLE II: OFFICERS

§7 The Secretary shall:

1. Take the minutes of all meetings, regular, special, Annual and Board of Directors, and submit a written report to be published in the Skyscraper newsletter.
2. Maintain an accurate, classified list of the membership of the Society. Membership Applications shall be submitted to the Secretary who shall transmit the attached dues to the Treasurer.
3. Notify applicants for membership of their election or rejection.
4. If required by the President, notify all additional officers, chairmen and committees of their appointment.
5. Send all required notices to the membership.
6. In general, conduct the correspondence of the Society.
7. Have custody of the records of the Society.

ORIGINAL

Constitution

ARTICLE IV: MEMBERSHIP

§2 An applicant for Junior, Regular, Family, and Senior shall submit a Membership application together with appropriate dues to the Secretary of the Society. Application for membership and payment of dues may also be done on the Society's website.

§8 Membership Dues in this Society are as listed within the Membership Application and on the Society's website.

Bylaws

ARTICLE I: FISCAL YEAR & DUES

§2 Dues are payable on April 1 for the dues year then beginning. The annual dues shall be as stated in the Membership Application and on the Society's website. Persons applying for membership during the months of April through December pay the above stated annual dues for the current fiscal year (April – March). Persons applying for membership during the months of January through March pay the above stated annual dues, but their membership extends through the next fiscal year. Persons making donations over and above their membership dues shall be called Contributing Members. Four distinguished categories of Contributing Members shall be designated: Sponsors ($60); Supporters ($100); Patrons ($250); and Benefactors ($500).

ARTICLE II: OFFICERS

§7 The Secretary shall:

1. Take the minutes of all meetings, regular, special, Annual and Board of Directors, and submit a written report to be published in the Skyscraper newsletter.
2. Maintain an accurate, classified list of the membership of the Society. Membership Applications and renewals shall be submitted to the Secretary who shall transmit the attached dues to the Treasurer.
3. Notify applicants for membership of receipt of their application and welcome them into the Society. Introduce new members to the general membership at the next regular meeting they attend.
4. If required by the President, notify all additional officers, chairmen and committees of their appointment.
5. Send all required notices to the membership.
6. In general, conduct the correspondence of the Society.
7. Have custody of the records of the Society.

PROPOSED CHANGES - 06/12/18

AstroAssembly 2018

September 28 & 29

47 Peeptoad Road North Scituate, Rhode Island

A Journey of Exploration

Friday Evening Presentation & Stargazing
at Seagrave Observatory

Prof. Peter Schultz, Brown University
"A Career of Exploration: My Backyard and Beyond"

All day Saturday
at Seagrave Observatory

Poster Session, Swap Table (please bring your own table), Solar Viewing, Astrophotography Contest, Homemade Telescopes (bring yours!), Famous Astro Bake-off Contest.

Steve Hubbard, Skyscrapers, Inc.
"California Dreaming (About Astronomy that is)"

Ed Ting, New Hampshire Astronomical Society
"In Chile"

Peter Scherff
"Meteorites 101: What they are, Where they come from & How we find them"

Saturday Evening Banquet & Program
at North Scituate Community House: 546 W Greenville Road

For up-to-date program information, see
http://www.theSkyscrapers.org/astroassembly2018

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:** 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 through 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.

_____ Registrations x $25 each = $ _____

_____ Registrations (Skyscrapers member) x $20 each = $ _____

_____ Registrations (children under 12) Free _____

_____ Banquet Tickets x $25 each = $ _____

_____ Banquet Tickets (children under 12) x $10 each = $ _____

Total = $ _____

Name _____

Address _____

_____

Email _____

Send completed form and check (Made payable to Skyscrapers Inc.) to:

Linda Bergemann
41 Ross Hill Road
Charlestown, RI 02813-2605

Directions to Seagrave Memorial Observatory

www.theSkyscrapers.org

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

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

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SKYSCRAPERS INC.

47 Peeptoad Road
North Scituate, Rhode Island 02857