Temecula Valley Astronomer

The monthly newsletter of the Temecula Valley Astronomers Aug 2018

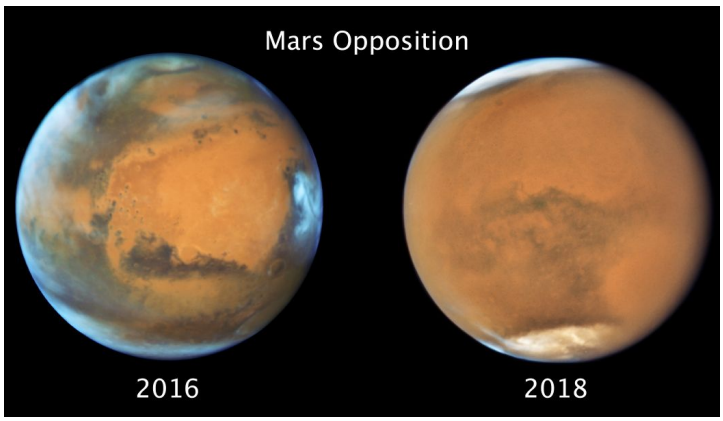
Events:

General Meeting :

Monday, August 6, 2018 at the Temecula Library, Room B, 30600 Pauba Rd, at 7 pm.

After the usual opening comments by President Mark Baker, Skip Southwick will present "What's Up." Our main speaker, Clark Williams, will present "Amateur Astronomy and Planetary Defense." Refreshments by Chuck Dyson.

Please consider helping out at one of the many Star Parties coming up over the next few months. For the latest schedule, check the Calendar on the web page.



Mars OppositionImage Credit & Copyright: NASA, ESA, and STScI

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by Jane Houston Jones and Jessica Stoller-Conrad

Send newsletter submissions to Mark DiVecchio <markd@silogic.com> by the 20th of the month for the next month's issue.

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Subscription to the TVA is included in the annual $25 membership (regular members) donation ($9 student; $35 family).

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Cosmic Comments
by President Mark Baker

OUTREACH…the word is more two sided than it sounds. We can “reach out” all we want, but someone needs to reach back for it to succeed.

That being the case, I’m so glad I didn’t quit on trying to get permission from our local communities to do what we do so well…motivating young and old alike to look up and wonder, and develop a love for Things Celestial.

We now have an inside track in Temecula and Menifee to become frequent Sidewalk Astronomers, and touch so many more of our neighbors. Summers, usually the death knell for Outreach, have been really busy this year, as you may have noticed from all the emails our Outreach Coordinator is burying you with. Working in conjunction with Events hosted by City Staff has proven a boon to us both, and the compliments have been extensive. As has the question, “What took you so long?”…!!! But I take even that as a positive…we ARE wanted!!!

And I’m especially proud of those that have “stepped outside the box” and contributed at least a presence at these events…you ALL make a difference!!!

So here’s to finishing up this Summer strong and paving the way for more allowances by the Cities to let us be out there, doing our thing, across the whole calendar year. I’ve already been promised that TVA will now be promoted in upcoming event calendars so our visibility will grow, uh, astronomically!!!

I take pride in my association with you all of TVA, so once again, Thanks for all you do…!!!

Clear, Dark Skies my Friends…

Looking Up Redux

compiled by Clark Williams

from sources:
Sky and Telescope
Wikipedia
in-the-sky.org
The American Meteor Society, Ltd.
NASA.gov

ALL TIMES ARE LOCAL PST WILDOMAR

Times are given in 24-hour time either as hh:mm:ss or hhmmss. A time given as hhmm+ indicates that it is the hour of the next day. Similarly a time hhmm− indicates a time in a previous day.

Moon Phases for the month by date: (all times are PDT)

Saturday the 4th @ 11:17 THIRD QTR
Saturday the 11th @ 02:57 NEW
Saturday the 18th @ 00:48 FIRST QTR
Friday the 26th @ 04:56 FULL
Perigee comes on 2018-08-10 @ 11:06 – 358,078 km (222, 500 mi)
Apogee comes on 2018-08-23 @ 04:22 – 405,746 km (252, 119 mi)

2018 has: (12) new moons, (12) 1st Qtr moons, (14) Full moons, (13) 3rd Qtr moons
(2) Blue moons and (1) Black moon

Luna:

Luna can be found rising in Cetus at the beginning of the month about 22:51:18 PDT. By mid month Luna is rising in Virgo and transiting in the afternoon about 16:51 PDT. By the end of the month Luna is rising in Aries at 22:34 PDT.

Highlights: (distilled from Sky & Telescope)

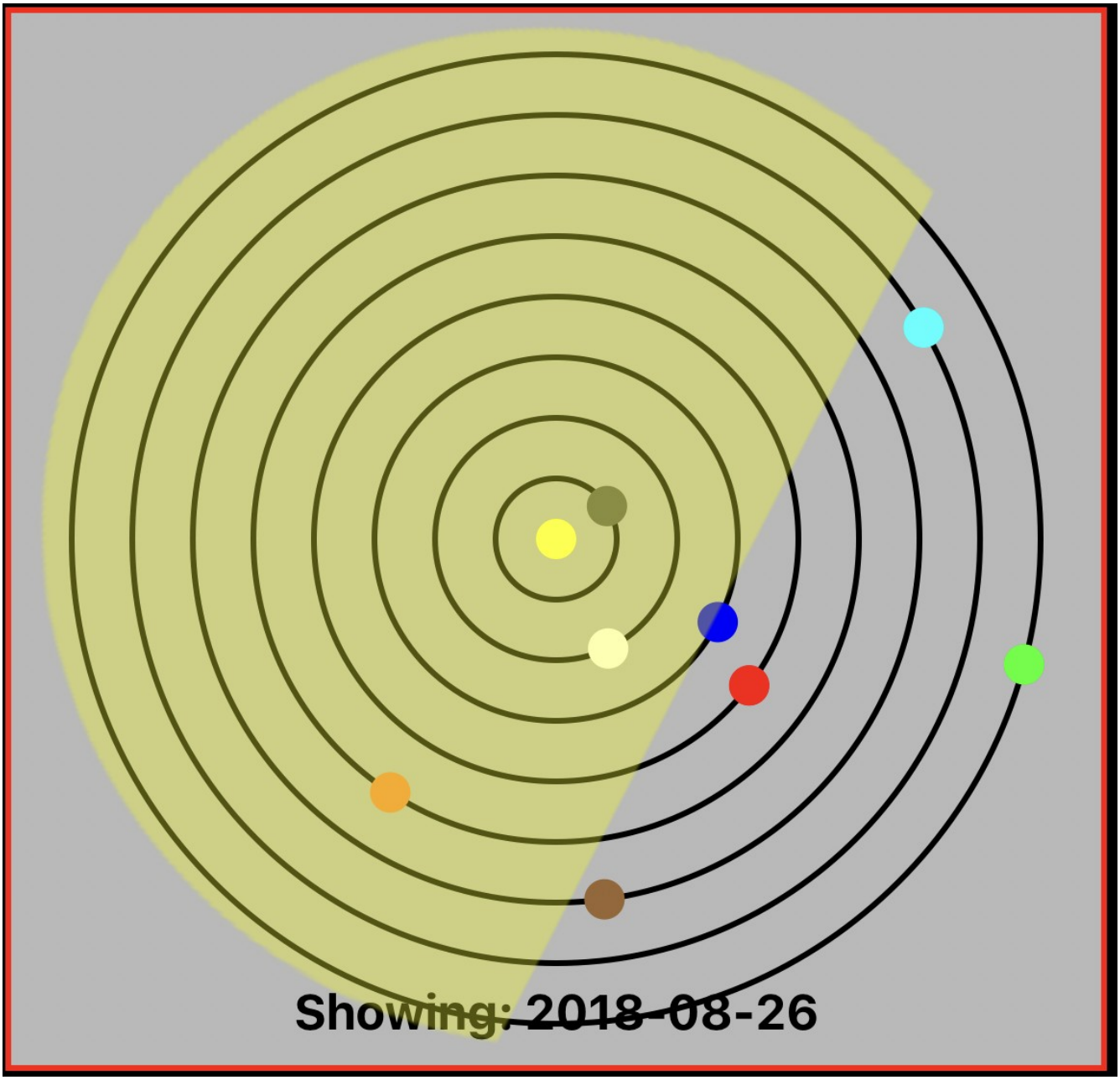
01 August: Dusk – The planetary display continues this month Mar in the southeast followed by Saturn, Jupiter and Venus in the West. This should last all month.

11 August: Daytime – A partial soar eclipse is visible from Greenland, northern Europe and northeast Asia.

12-13 August: Night: The Perseids are back! They should peak the night of the 12th. The moon is NEW on the 11th so this should be a wonderful time to view this annual fireworks show.

26 August: Dawn – Look for the rising Mercury in the east. Mercury reaches greatest western elongation.

Planets:
Planetary Positions August 2018: (from TVA App iOS version)



- Mercury: You should start your Mercury viewing after the 20th of August. Mercury will be about 30% illuminated and creeping up in the eastern sky. By the end of the month Mercury is about 50% illuminated; a great imaging challenge.
- Venus: Will be about 50% illuminated all month. She starts out the month as an “evening star” setting around 2230. By mid-month she has lost 20 minutes and is setting by 2132 and by end of month is down by 2109 PDT.
- Mars: Mars is still dazzling this month beginning the month rising at 1944 PDT. By mid-month the warrior is up by 1838 and at month's end rises by 1729. Mars is more than 24″ wide through August 8th and wider than 18.6″ (its maximum 2016 diameter) almost all summer.
- Jupiter: Jupiter rises by 1333 DT at the beginning of August, transiting by 1854 PDT. By mid-month Jove is rising at 1244 PDT and transiting by 1803. This disappointing trend continues so that by end of month rise is by 1150 ; transiting by 1708.
- Saturn: Saturn was rising late last month leading Mars by about an hour. But this month the ringed wonder starts out the month rising by 1723 and transiting by 2221. Even by mid-month Saturn is rising by 0424, transiting by 2123 and setting around 0224+. Even by the end of the month Saturn is rising at 1521, transiting by 2019 and setting at 0120+.
- Uranus: Uranus finally is creeping up in the late night sky rising at 2333 and transiting by sunrise. Still it is a good time to try imaging this jewel or even find it with a magnitude of +5.8 and 99% illuminated. By mid-month you're finding a rise time of 2238 and by end of month you have from 2134 until dawn.
- Neptune: Neptune is ;eading Uranus by almost 2 hourss rising in the beginning of the month by 2130 and transitiung only by about 0319+. By mid-month rise time I at 2034 and you have until dawn. Even by the end of the month The trident pokes above the surface of the horizon by 1930 and you can observe or image all night long.
- Pluto: Pluto is dim this month at about mag 14.2. At the start of the month Pluto is rising t 1829 and doesn't set until 0434+. This means you have a lot of time to find and image this wonderful little planet. Ny mid-month Pluto is rising at 1733, transiting around 2234. End of month sees a rise time of 1630 and a transit time of 2130. The point of all of this is that your best bet for viewing Pluto is now.

Asteroids:

- Not much until September.

Meteors:

- The Perseid meteor shower, one of the brighter meteor showers of the year, occurs every year between July 17 and August 24. The shower will peak this year on August 12th. You'll need dark skies but the viewing should be spectacular since NEW MOON will be on the 11th of August.

Comets:

- Comets come in various classifications:
  - 1) Short Period comets – further broken down into:
    - Halley Type: The Halley Types are believe to come from the Kuiper Belt and have periods in excess of 20-years.

    - Jupiter Type: The Jupiter types have a period less than or equal to 20-years.
    - Short period comets may have a near circular orbit or an elliptical orbit. The latter being far more common.
  - 2) Long Period comets – thought to originate from the Oort cloud these comets have periods of over 200 years and have random inclinations around the celestial sphere.
- Comet 21P/Giacobini-Zinner – is what everyone is waiting on. We should find out later this month just how good or how much of a dud this one will be; stay tuned.

Deep Sky:

In each case you should look for the following on or about the 15th Day of July 2018 at 2100 PDT and you will have about 20 minutes of viewing time total.

The one thing August brings us is the potential for marvelous viewing and imaging:

- The Summer Triangle– Made up of three stars that are usually used as alignment stars this asterism is formed by Altair, Deneb and Vega the brightest stars in the three constellations of Aquila, Cygnus, and Lyra. The name was popularized by Hans Augusto Rey (H.A. Rey of “Curious George” fame) and Patrick Moore but can be found as a reference to the asterism in literature as far back as 1913. In the mid- to late-20th century, before inertial navigation systems and other electronic and mechanical equipment took their places in military aircraft, United States Air Force navigators referred to this asterism as the "Navigator's Triangle". (Wikipedia) Inside this asterism are several fun objects lets look at a few:
- Crescent Nebula – AKA NGC 6888 is an emission nebula in the constellation Cygnus, about 5000 light-years away from Earth. It was discovered by Friedrich Wilhelm Herschel in 1792. It is formed by the fast stellar wind from the Wolf-Rayet star WR 136 (HD 192163) colliding with and energizing the slower moving wind ejected by the star when it became a red giant around 250,000 to 400,000 years ago. The result of the collision is a shell and two shock waves, one moving outward and one moving inward. The inward moving shock wave heats the stellar wind to X-ray-emitting temperatures.. It is a rather faint object located about 2 degrees SW of Sadr. For most telescopes it requires a UHC or OIII filter to see. Under favorable circumstances a telescope as small as 8 cm (with filter) can see its nebulosity. (Wikipedia)
- The Ring Nebula – AKA M57 or NGC 6720 is a planetary nebula in the northern constellation of Lyra. Discovered by the French astronomer Charles Messier in late January 1779 he reported his independent discovery of Comet Bode to fellow French astronomer Antoine Darquier de Pellepoix two weeks later, who then independently rediscovered the nebula while following the comet.
- The Dumbbell Nebula – AKA M 27, or NGC 6853 This object was the first planetary nebula to be discovered; by Charles Messier in 1764. The nebula is the result of an old star that has shed its outer layers in a glowing display of color. M27 resides more than 1,200 light-years away in the constellation Vulpecula; with an apparent magnitude of 7.5 (NASA)

August is great for both planetary and deep sky viewing and imaging. Spend some time outside with your scope. Summer is here.

For now – Keep looking up.

Random Thoughts
by Chuck Dyson

GRAB 'N' GO SCOPES

When I retired I moved into a small town, Menifee, with only a few housing developments around me that had, by L.A. city lights standards, fairly dark skies I thought that my days and nights of grabbing a telescope and driving into the country to do a little observing were over but sadly no they were not over.

Today there are four reasons I still have not one but several grab 'n' go setups at my disposal. The first grab 'n' go set up that I use is designed to go from my living room to my backyard, not the longest trip. However, if I am carrying a large telescope and a large GoTo mount through the forest of patio chairs that my wife has accumulated, it can be a most interesting trip. In order to get out into my backyard and get observing I have two telescopes and two binoculars that I use as my grab 'n' go setups.

The two scopes are a Vixen ED114SS f/5.3 refractor and an old Celestron 127 mm f/10 spotting scope both are pressed into service on top of a Vixen Porta II Mount. Both scopes are about as big as I want in a grab 'n' go situation. On the binocular side of things I use both my old Garrett 22 X 85 binoculars on a monster tripod; they are quite heavy, and my Celestron 15 X 70 on a smaller and lighter photographic tripod. Neither binocular is a "planet killer" so when I use them only deep sky objects are on the menu for the night. The Garrett binoculars are also at the very, very top of what I would call a grab 'n' go scope as they are very heavy and awkward to handle when on the end of their tripod. Although the Garrett's and their tripod are best brought into the backyard and setup in stages, the advantage of the Garrett over the Celestron is that with the Garrett binoculars I get almost 50% more light and that makes a big difference in what I get to see.

The second grab 'n' go scenario that I often find myself in is the good old "outreach at a school" evening. The three challenges with this scenario are to choose equipment that I can, with relative ease, get in and out of my car, have setup and operating within a short period of time and under less than ideal sky conditions, and provide the students with views of the celestial objects that will impress them and get them to want to learn more about astronomy.

After several equipment experiments I have settled, for the most part, on a 4½ in (114mm) Vixen refractor and my 127mm f/10 Celestron and I use my Vixen Porta II Mount for both of these scopes when I bring them. I am in a hurry to setup because I have noticed that about one hour after good viewing starts, as if by magic, the crowd disappears completely and if you spend a half of an hour setting up and aligning your GoTo system you have only half an hour of time left to show the crowd anything. The major drawback with the Vixen mount is that it is not powered and must be continuously readjusted. Although powered equatorial and GoTo mounts are generally not considered to be grab 'n' go friendly or compatible with the keep it simple philosophy, in this case I may have to make an exception and use a GoTo mount in manual tracking mode so that I am able to get more eyepiece time for more people - watch for the experiment to be carried out this fall.

As an aside, one local astronomer says that when his equipment gets to a certain size and weight it goes from grab ‘n’ go to grab ‘n’ groan. I got a good dose of grab ‘n’ groan training this spring as, out of curiosity, I bought a heavily marked down five inch refractor thinking how much heavier than my four and a half inch refractor can it be? And the short answer is plenty heavy and awkward to handle to boot. Lesson learned.

The third grab ‘n’ go situation that I find myself in is the good old road trip scenario. Now this scenario comes in two flavors. The first flavor is a general road trip with some viewing thrown in as a bonus for me. In this situation I will take one or two binoculars on the trip and try and get my wife to book us into hotels or cabins that are on or close to golf courses. After dark I will, at my leisure, walk out onto the golf course and observe to my heart’s content from a fairway that is as far from the hotel lights as possible, good golf course manners dictate that one never, ever observe from the putting greens.

The second flavor of a road trip is a trip that is specifically for the viewing of a celestial event or to get to a sight that will allow me to see objects that are just not visible from my home location or anywhere near my home location. In this situation the grab ‘n’ go philosophy gets thrown out the window and I go with the best equipment that I have that will show me what I am going to see. I learned a long time ago that if you take your favorite 4½ inch refractor to a remote mountain top, that scope will show you all that it is possible to see through a 4½ inch scope and nothing more, no magic here folks; if you want to see more detail in the objects you are looking at - get a bigger scope.

The fourth grab ‘n’ go scenario that I have found myself addressing is the plane flight to my chosen observing sight. Choosing the right equipment when flying is a big thing. For example when I dawdled on shipping my observing gear one time, I had to FedEx everything from L.A. to Maui and that was a $400 bill that my wife has never let me forget. The good news is that shipping my equipment back was by UPS ground and that was only a $187 bill. Flying equipment is expensive and I hate the thought of giving baggage handlers my telescope to play with. For this reason my preferred airline travel scope is an 80 mm refractor that is housed in a carry-on friendly case, I travel better and sleep better when my scope is under my control and not in a baggage compartment with God knows what for company. If I am not going on an astronomy specific trip, but just a vacation, I will often take my 15 X 70 binoculars and a photographic tripod for a little spur of the moment viewing. The major advantage of this setup is that both binoculars and tripod will fit into a large suitcase and the binoculars are tough enough to survive the trip. It is very hard for me to say enough good things about the 15 X 70 binoculars as they are easy to transport and give you wonderful views of deep sky objects under dark skies plus you save up to $400 in shipping fees.

Although the question is simple “what is a grab ‘n’ go scope” the answer is quite difficult and there is no one scope that will satisfy all users all of the time. To make matters even worse, there are classes of scopes that I have not even mentioned that are excellent grab ‘n’ go scopes. A good example are the small Maksutov-Cassegrain (Maks) 90mm, 100mm, 110mm, and 125mm diameter scopes that are made by Celestron, Mead, Vixen, Questar (did you hear angels when you said Questar?), and many more manufacturers. The advantages of Maks is

that they can come as a complete mini observatory, are compact, there are several web sites advising one as how to ship your little Mak in a hard shell beer cooler, and rugged, and the corrector plate is much more crack proof than the corrector on a Schmid-Cassegrain design. The down side of a Mak is that it has a narrow field of view - Maks are usually of f/12 or f/15 design, and it can take a long time to cool down. There is a lot of glass in that corrector plate.

Another type of scope that has had at least a small following in the grab 'n' go category is the spotting scope. In the past, the spotting scope has suffered from, sorry for the pun, less than stellar performance at higher powers. Many spotting scopes are of the straight-through design and not the 45° or 90° diagonal design. Although straight-through works well on the shooting range where you are just looking at targets, in the astronomy realm when you are trying to look high up into the sky, your viewing session quickly turns into an advanced yoga class. Another major problem with spotting scopes was that they tended to have fixed zoom eyepieces so you were stuck with what the manufacturer glued to the back of the scope. Top end scopes that did have exchangeable eyepieces tended to be the poster boys for sticker shock, you want $4000 for what?! Lately professional writers, who may be getting paid to encourage people to buy the item they are writing about, have been touting the advantages of some of the newer spotting scopes with ED glass in them and sporting 45° diagonals, eyepieces that can be changed out and are compatible with standard 1¼ inch telescopic eyepieces. Unfortunately, a review of the literature has turned up no really good user evaluations by "working" amateur astronomers in the field.

Long story short, a grab 'n' go scope will probably encourage you to do more observing than if you only had your big scope and it fits you observing style and needs.

Cheers,
Chuck

Pondering the Planetary Nebula Enigma

by Clark Williams

Early astronomers didn't have much to go on for naming the objects they saw in the sky.

Early naked-eye astronomers noticed that Mercury, Venus, Mars, Jupiter and Saturn all had apparent movement to the background stars. They also had retrograde motion so they appeared to “wander” among the stars. They called these by the Greek word for wander. We get the name most directly from Middle English which got it from Old French, that got it from late Latin, which in turn got it from the Greek: planētēs – ‘wanderer, planet’, derived from: planan – ‘wander’.

The rage of the middle and late 18th century was the system of classification based on observation. The problem with observation is that it is so subjective. It works well for architecture but is more problematical for biology or astronomy. Hence evolutionary trees built from classifications made in the 18th century are being re-written based on DNA and the image looks much more like an evolutionary cloud than a tree.

The first “planetary nebulae” discovered was the “Dumb-bell” nebulae discovered by Charles Messier in 1764. In his 3-inch refractor it appeared to be a fuzzy blob. Telescope making had progressed quite a way by the late 1700s and Herschel had access to some of the best telescopes in the world. Still they weren't stellar in performance. When, in 1782, astronomer William Herschel viewed the “Saturn Nebula” (NGC 7009) through his telescope what he saw resembled a round fuzzy object. Herschel thought the objects were stars surrounded by material condensing into planets. In a rather cavalier way he named these kind of objects “Planetary Nebulae”. Thus naming things after what they looked like, gave an astronomical object one of the worst names ever; as these objects have nothing to do with planets. They are instead the remnants of dead stars that have obliterated their planets.

Although Herschel did recognize his cavalier naming technique noting: "These are celestial bodies of which as yet we have no clear idea and which are perhaps of a type quite different from those that we are familiar with in the heavens.” – Never-the-less the name is still with us.

Some astronomers have taken to calling these objects “emission nebulae” (emission: late Middle English [in the sense ‘emanation’]: from Latin emissio[n-], from emiss- ‘sent out’, from the verb emittere and nebulae Latin – literally: 'mist'). Thus: “expanding mist” and that is what we will call them here.

The current stellar evolutionary theories have stars creating brightness-based emission nebulae based on star mass. The larger the mass of the star the brighter the emission nebulae. This idea however seems to be woven-from-whole-cloth. It just does not match observations.

If this theory were true then in elliptical galaxies where we expect only low-mass stars, we would see dimmer emission nebulae than what one would find in spiral galaxies with many higher mass stars. Instead what we find are emission nebulae in elliptical galaxies just as bright as some spiral galaxy emission nebulae. Curiouser-and-curiouser[1] – how can this be?

A possible explanation has been proffered by a University of Manchester, England, astrophysicist and his colleagues. Albert Zijlstra has run simulations on stars ranging from 1.1 to 3 solar masses and found that these stars can produce emission nebulae with quite similar brightness.

His theory proposes that once smaller stars shed their outer envelopes, their cores heat up more quickly than we believed previously. That allows the stellar core to pump higher-state energy into the surrounding nebula at a faster rate and in a shorter time. Thus the gas is heated more quickly than previously believed. This could explain why nebulae found in galaxies with older stars are just as bright as those found in galaxies with much younger stars.

The simulations didn't work quite as well on the older stars as expected however. So while this is a first step in pondering the planetary nebula enigma it is not the final explanation. More research and perhaps modifications to the theory are needed.

1 **"Curiouser and curiouser!" Cried Alice (she was so much surprised, that for the moment she quite forgot how to speak good English)." — Lewis Carroll, Alice's Adventures in Wonderland & Through the Looking-Glass**

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!

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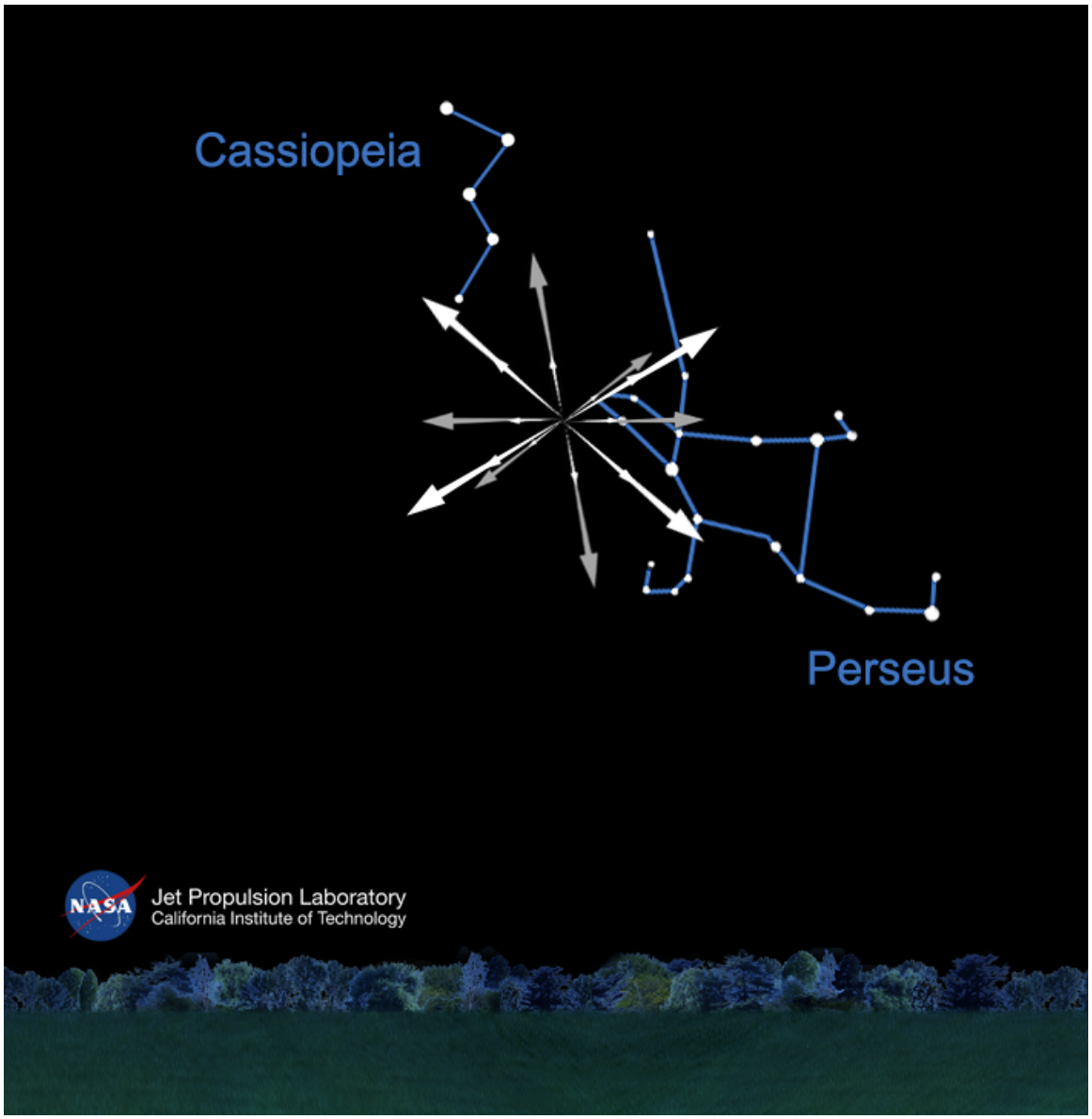

The Perseid meteor showers appear to radiate from the constellation Perseus. Perseus is visible in the northern sky soon after sunset this time of year. Credit: NASA/JPL-Caltech

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