

# 2020 Celestial Events Calendar

Below are notable historic dates and celestial events that are visible from the Nashville/Brentwood area. All times are local. Please refer to our event calendar to see if Dyer Observatory is planning a special viewing for any of these events.

**Jan 3-10 – Latest sunrises of the year at 6:58am.**

**Jan 4 predawn – Quadrantid Meteor Shower Peak.** This shower is distinctive for it has an especially brief peak and is associated with an asteroid (2003 EH<sub>1</sub>) rather than a comet. Observe up to 25 meteors per hour radiating from the area just north of the constellation Boötes.

**Jan 5 – Earth at perihelion at 1:47am.** The planet is at its closest point to the Sun at 91,398,199 miles.

**Feb 3 – Muriel E. Mussells Seyfert Birthday.** On this date in 1909, astronomer and wife of Dr. Carl Seyfert, was born in



Danvers, Massachusetts. Prior to her work at Dyer Observatory, she was an astronomer at Harvard College Observatory and is known for discovering three new planetary nebulae in the Milky Way. She is also known for being a talented portrait artist. Her paintings of Carl Seyfert and Arthur Dyer hang in the stairway up to the main telescope.

*This photo was taken, March 1936. Smithsonian Institution Archives, Accession 90-105, Science Service Records, Image No. SIA2009-3191*

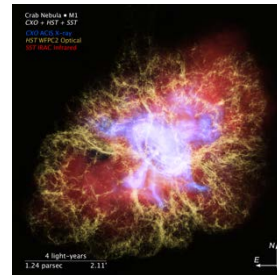
**Feb 11 – Dr. Carl Keenan Seyfert Birthday.** On this date in 1911, the Dyer Observatory's first director was born in Cleveland, Ohio. He graduated from Harvard and served at multiple observatories including Yerkes, McDonald, Mt. Wilson, and Warner Swasey. Upon his arrival at Vanderbilt, he took on the challenge of reinvigorating the astronomy program and the building of the modern Dyer Observatory completely with community donations. Dr. Seyfert is known for his research on galaxies and is immortalized by having a class of galaxies, a grouping of six galaxies known as "Seyfert's Sextet," a 54km-wide crater on the far side of the Moon, as well as the Dyer's 24" telescope named after him.



marks the first day of spring in the Northern Hemisphere and autumn in the Southern Hemisphere. This is the earliest spring equinox since 1896. The astronomical season will last 92 days, 17 hours, and 54 minutes.

**April 22 predawn – Lyrid Meteor Shower Peak.** This display is produced by dust particles left behind by Comet C/1861 G1 Thatcher, which takes approximately 415 years to orbit the Sun. The comet will next be visible from Earth in 2276. Meteors will appear to radiate from the constellation Lyra, which hosts the bright star Vega, at a rate of 10-20 meteors per hour. Fireballs are possible. The entire shower is visible April 16-25.

**April 24 – Hubble Space Telescope 30<sup>th</sup> Anniversary.** Hubble was launched aboard the Space Shuttle Discovery (STS-31) on April 24, 1990 and deployed into orbit the following day. It currently orbits at an altitude of approximately 340 miles above Earth so that it may view the cosmos with minimal atmospheric interference. Traveling at about 17,000 miles per hour, Hubble takes about 95 minutes to complete one orbit around Earth.



*Crab Nebula photo: NASA, ESA J.*

*DePasquale (STScI), and R. Hurt (Caltech/IPAC)*

Hubble is more scientifically productive today than at any time in its history, and NASA plans to operate Hubble well into this new decade, and possibly longer. The telescope partly owes its longevity to five servicing missions that occurred between 1993 and 2009.

The Hubble is easily seen with the naked eye when it passes through the southern sky of Tennessee. Many apps can alert you when to look up!



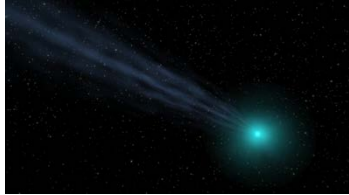
*This illustration shows the NASA/ESA Hubble Space Telescope in its high orbit 600 kilometers above Earth. Credit: European Space Agency*

**March 19 – Spring Equinox at 10:50pm.** The Sun will shine directly on the equator and there will be nearly equal amounts of day and night on the entire surface of the Earth. This date

### April 26 – 100<sup>th</sup> Anniversary of The Great Debate.

Astronomers Harlow Shapley and Heber D. Curtis argued whether the universe is composed of many galaxies similar to our own or that the universe was merely a single large galaxy. This debate illuminated at the time science's method of reasoning and humanity's effort to place itself within the universe. Edwin Hubble's research settled the debate three years later.

**Month of May – Comet Atlas Visibility Peaks.** This green comet discovered in Dec 2019, formally named C/2019 Y4 (ATLAS), is



expected to peak in brightness during this month. Predictions for its greatest magnitude vary greatly because it is not known if it will remain intact as it draws closer to the Sun. As of April, it looked as if it may be breaking up. If it does stay intact, it could be as bright as Venus and possibly visible during the day. *NASA/JPL-Caltech*

**May 4-6 predawn – Eta Aquariid Meteor Shower Peak.** This shower is notable for it is produced by dust particles left behind by the well-known Comet Halley—which is also the source of debris for the Orionid shower in October. The comet orbits the Sun every 76 years, making it next visible from Earth in 2061. The shower runs annually from April 19 to May 28. Meteors appear to radiate from the constellation Aquarius but may appear anywhere in the sky at the rate of 10-50 meteors per hour at Nashville's latitude.

**May 21 – Mercury-Venus Conjunction.** Look for this beautiful pair in the west just after sunset. Venus will be the brighter planet. They will appear to be separated by a little over a degree, which is two full moon widths or the width of the index finger at arm's length.

**May 27 – Arthur J. Dyer Birthday.** Our observatory's namesake was born in 1868 in Medfield, Massachusetts. Dyer graduated from Vanderbilt with a degree in engineering in 1891 and



went on to found the Nashville Bridge Company, which engineered and built bridges throughout the Americas before diversifying into general construction and shipbuilding. His asking Dr. Carl Seyfert to set up a sundial on his property was the genesis of a relationship that financed the fulfillment of Seyfert's vision to build Vanderbilt's new observatory in the early 1950's.

*Painting by Muriel E. Mussels Seyfert*

**June 10-15 – Earliest Sunrises of the year at 5:29am.**

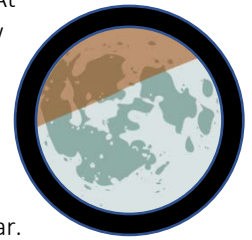
**June 20 – Summer Solstice at 4:43pm.** The solstice marks the beginning of our summer and provides a daylength of 14

hours and 36 minutes. Solar noon is at 12:48pm. This also marks the start of winter for those in the Southern Hemisphere. The astronomical season will last 93 days, 15 hours, and 46 minutes.

**June 28 – Latest sunset of the year at 8:08pm.**

**July 4 – Earth at Aphelion at 6:34am.** The planet is at the farthest point from the Sun at 94,507,635 miles. Earth is moving at the slowest speed of its orbit.

**July 4/5 – Penumbral Lunar Eclipse.** At 10:07pm (7/4), Earth's outer shadow begins to pass over the full Moon's face. At 11:29pm it will be at its peak by covering about a quarter of the Moon. The eclipse ends at 12:52am (7/5). This event is subtle but worth a look if it is especially clear.



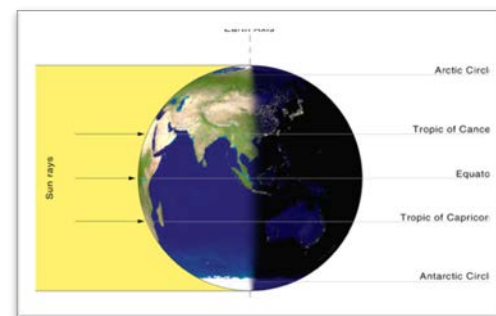
**July 29-30 predawn – Alpha Capricornid Meteor Shower Peak.**

The entire shower lasts from July 3 through August 15. It typically produces about five meteors per hour, but they are notable for being bright fireballs. The parent object is Comet 169P/NEAT, which was discovered in 2002 and orbits the Sun every 4.2 years.

**July 29 predawn – Southern Delta Aquariid Meteor Shower Peak.** This shower is active from July 12 through August 23 and may produce up to 20 meteors per hour during the week around this peak date. These typically faint meteors will radiate from the constellation Aquarius but may appear anywhere.

**Aug 11-13 predawn – Perseid Meteor Shower Peak.** The Perseid meteor shower is one of the brightest and most prolific showers. The entire shower runs from July 17 to August 26 and is created by debris left behind by Comet Swift-Tuttle, which was discovered in 1862. Meteors will radiate from the constellation Perseus at rates of up to 75 meteors per hour but may appear anywhere in the sky.

**Sept 22 – Autumn Equinox at 8:30am.** The Sun will shine directly on the equator and there will be nearly equal amounts



of day and night on the entire Earth's surface. This is the first day of autumn in the Northern Hemisphere and spring in

the Southern Hemisphere. The astronomical season will last 89 days, 20 hours, and 31 minutes. *Illustration by Przemyslaw, courtesy Wikimedia. CC-BY-SA-2.0*

**Sept 26 – International Observe the Moon Night.** Everyone on Earth is invited to learn about and view the Moon together. It



is also a time to reflect on our personal and cultural connection to our nearest celestial neighbor. This is scheduled around the Moon's first quarter phase

because it is easily visible in the afternoon and evening, which is convenient for families. Also, this timing allows excellent viewing of the dusk/dawn terminator, where shadows are the longest.

**Oct 9 late evening – Draconid Meteor Shower Peak.** The Draconids vary in drama from year to year. The source is dust grains left behind by Comet 21P Giacobini-Zinner, which was first discovered in 1900 and has an orbit around the Sun of 6.6 years. Meteors will radiate from the constellation Draco but can appear anywhere in the sky.

**Oct 21-22 predawn – Orionid Meteor Shower Peak.** The



Orionids typically produce a maximum of 20 meteors per hour at the peak. This meteor shower, as well as the Eta Aquariids, is produced by dust grains left behind by the famous Comet Halley. The shower runs annually from early October to early November. Meteors will radiate from the constellation Orion but may appear anywhere in the sky. *The ESA's Giotto*

*spacecraft photographed the nucleus of Halley's Comet in 1986. The matter seen escaping from the bright jets may burn up in Earth's atmosphere as a future Orionid or Aquariid meteor shower.*

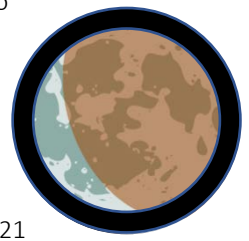
**Oct 29-30 – Southern Taurid Meteor Shower Peak.** This shower runs from early September to early December and produces about five meteors per hour. Dust grains left behind by Asteroid 2004 TG10 produce colorful fireballs. Meteors radiate from the constellation Taurus but can appear anywhere in the sky.

**Nov 9 late evening – Northern Taurid Meteor Shower Peak.** This shower runs from mid-September to mid-December and produces about five meteors per hour from debris left by Comet 2P Encke. Meteors radiate from the constellation Taurus but can appear anywhere in the sky.

**Nov 17-18 predawn – Leonid Meteor Shower Peak.** The Leonids typically display up to 15 bright meteors per hour at the peak and are produced by debris left behind by Comet 55P/Tempel-Tuttle. The entire shower runs annually through much of November. Meteors will radiate from the constellation Leo but may appear anywhere in the sky.

**Nov 30 (night of Nov 29) – Penumbral Lunar Eclipse.** At

1:32am, Earth's outer shadow begins to pass over the full Moon's face. At 3:42am it will be at its peak by covering about three quarters of the Moon. The eclipse ends at 5:53am. This event is subtle but worth a look if it is especially clear. We look forward to more impressive lunar eclipses in 2021 on May 26 and Nov 19, plus May 15/16 in 2022.



**Dec 1-7 – Earliest Sunset of the Year** at 4:32pm.

**Dec 13-14 all night – Geminid Meteor Shower Peak.** The Geminid meteor shower is widely considered the most glorious shower, producing up to 120 bright, multicolored meteors per hour at its peak. A bonus is that good activity begins well before midnight. It is courtesy of debris left behind by an asteroid (3200 Phaethon) rather than a comet. The entire shower runs December 4 through December 17. Meteors will radiate from the constellation Gemini but may appear anywhere in the sky.

**Dec 16 – Edward Emerson Barnard Birthday.** On this date in 1857, Nashville's own E. E. Barnard was born to an

impoverished widow. After surviving the Civil War, he began working at age 9 as a photography assistant to support his family. As a teenager, Barnard developed a keen interest in the night sky, and through self-study, became one of the city's leading observational astronomers at Vanderbilt's first observatory. He gained worldwide



acclaim during his career at Vanderbilt and elsewhere for his



discoveries including more than a dozen comets, the fifth moon of Jupiter, and the star with the fastest proper motion relative to Earth, which now bears his name.

*Photo of the North American Nebula by E. E. Barnard. Undated. From the Vanderbilt University Special Collections.*

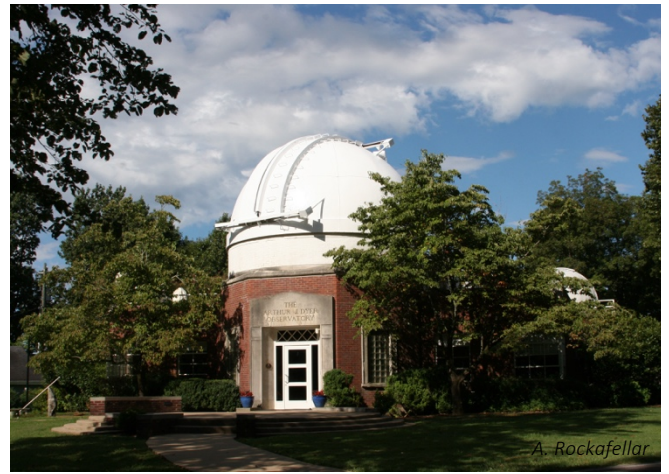
**Dec 21 – Winter Solstice at 4:02am.** This is the first day of winter in the Northern Hemisphere, which also will experience the longest night, and the first day of summer in the Southern Hemisphere. The astronomical season will last 88 days, 23 hours, and 35 minutes.

**Dec 21 – Jupiter-Saturn Conjunction.** These bright planets will appear about one quarter of a degree apart, making both gas giants and some of their moons visible simultaneously by telescope.

**Dec 22 predawn – Ursid Meteor Shower Peak.** The Ursids produce about 5-10 meteors per hour from dust left behind

by Comet 8P/Tuttle, which was first discovered in 1790. Occasionally, outbursts produce up to 25 Ursids per hour. The shower occurs every year from mid to late December. Meteors will radiate from the constellation Ursa Minor but can appear anywhere in the sky.

**Dec 27 – The Arthur J. Dyer Observatory and its telescope were dedicated in 1953. We celebrate our 67<sup>th</sup> anniversary!**



Vanderbilt University's Dyer Observatory is a special place of learning tucked high atop one of the tallest peaks in Nashville and surrounded by the natural beauty of Radnor Lake State Park. Our mission is to inspire student and public interest in science through school tours, summer camps, telescope nights, open houses, and lectures. We proudly serve as part of the Government and Community Relations Division of Vanderbilt University.

Post and follow us at [@dyerobservers](#) on Facebook, Twitter, and Instagram for news and updates throughout the year.

We are closed yearly Dec, Jan, and Feb. Please contact us before visiting.

**Our address: 1000 Oman Drive, Brentwood TN 37027  
Phone: 615-373-4897 [dyer.vanderbilt.edu](http://dyer.vanderbilt.edu)**

Research for this calendar was sourced from American Meteor Society, timeanddate.com, Tennesseencyclopedia.net, Smithsonian Institution Archives, The Old Farmer's Almanac, hubblesite.org, phys.org, newspapers.com, nightsky.jpl.nasa.gov, nasa.gov



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