April 2024

10:00 pm on April 1
9:00 pm on April 15
8:00 pm on May 1

To use this chart: hold the chart in front of you and turn it so the direction you are facing is at the bottom of the chart.

- **Bright Stars**
- **Medium Bright Stars**
- **Faint Stars**

Scan dark skies with binoculars:

M-42: The Great Orion Nebula

M-44: The Beehive Cluster

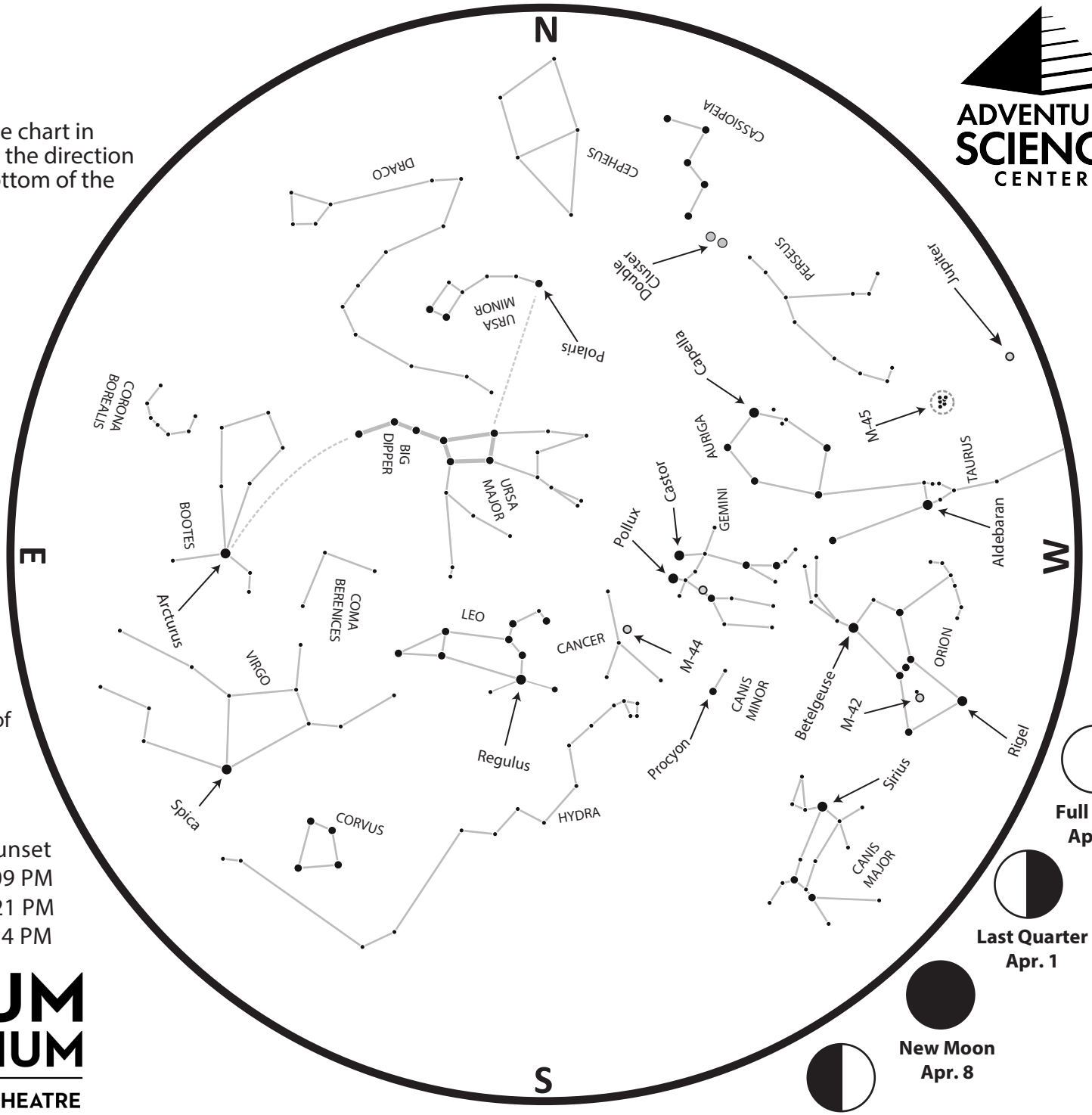
M-45: The Pleiades star cluster

The Double Cluster in Perseus

Spring is here! The days have been getting longer ever since the first day of winter, and will continue to lengthen until the first day of summer, June 21.

From Nashville:

	Sunrise	Sunset
Apr. 1	6:33 AM	7:09 PM
Apr. 15	6:14 AM	7:21 PM
May 1	5:54 AM	7:34 PM



Full Moon
Apr. 23

Last Quarter
Apr. 1

New Moon
Apr. 8

First Quarter
Apr. 15

ADVENTURE SCIENCE CENTER

SUDEKUM PLANETARIUM

JUDITH PAYNE TURNER THEATRE

Download monthly star charts and learn more about our shows at adventuresci.org/planetarium

April 2024

After Sunset

Look low in the west as the sky begins to darken for the planet **Jupiter**. It may be the first point of light you see. A close look with a telescope will reveal its cloud bands and up to four of its largest moons. It will set by 10 pm near the beginning of the month, but by the end of the month it may be lost in the glow of sunset. Look for a slim crescent Moon near Jupiter on the evening of April 10.

Look high in the north for the **Big Dipper**. As famous as the Dipper is, it's not always easily visible from our latitude in Tennessee. During the autumn, it stays hidden near the northern horizon, only to emerge in the wee hours of the morning. But in the spring, the Dipper is high in the sky, easy to find.

You can use the stars of the Big Dipper to find **Polaris**, the **North Star**. Use the two stars at the end of the bowl of the Dipper to point you to Polaris. When you face Polaris, you're facing due north.

Polaris is not a particularly bright star, but it does remain fixed in the sky throughout the night and throughout the year. Polaris is at the end of the handle of the **Little Dipper**. This group of stars is officially known as **Ursa Minor the Little Bear**. Similarly, the Big Dipper is just a part of the official constellation **Ursa Major the Great Bear**. You'll need dark skies to see the great bear's fainter stars.

Imagine poking a hole in the bottom of the Dipper to let the water drip out. The water falls onto the back of **Leo the Lion**. The head and mane of the lion are represented by a group of stars that looks something like a backwards question mark. Other stargazers imagine the top hook of a coat hanger, or a sickle in this group of stars. The "dot" at the bottom of the question mark is **Regulus**, the brightest star in Leo. It marks the regal heart of the lion.

Follow the curved handle of the Big Dipper to trace the 'arc' to **Arcturus**, the orange colored star in **Boötes the Herdsman**. Then speed on to **Spica**, the single bright star in **Virgo the Maiden**, low in the southeast. Neither of these constellations has any other bright stars. Even under dark skies away from city lights, it's hard to imagine these mythological figures just by connecting the dots.

Look low to the west for our last glimpses of winter constellations. **Orion the Hunter** stands out early in the month, but will be lost in the glow of sunset by May. Follow Orion's belt to the left to find the brightest star in the night sky, **Sirius**, in **Canis Major the Big Dog**. Follow the belt stars to the right to find orange star **Aldebaran**, the eye of **Taurus the Bull**.

Keep going past Aldebaran in the same direction to find a beautiful cluster of stars known as the **Pleiades**. To some eyes it looks like a miniature version of the Little Dipper. Under dark skies most people can see six stars, but under excellent dark-sky conditions, people with good eyesight can see seven. With a small telescope or a pair of binoculars, you may see dozens! The Pleiades is an example of an **open star cluster**. Look for it early in the month - by the end of the month it will set early, lost in the glow of sunset.

Draw a line from Orion's blue-colored foot **Rigel** up through red star **Betelgeuse**, and keep on going until you run into **Gemini the Twins**. The bright stars **Castor** and **Pollux** mark the heads of the twins from ancient mythology. Under dark skies you may just be able to pick out two stick-figure bodies leading back towards Orion.

From Dark Skies

Bright outdoor lighting can make it hard to see all but the brightest stars. Even a bright Moon can make it difficult to see the fainter objects in the sky. On a clear night, find a dark spot far away from city lights, give your eyes time to adjust to the dark, and look for even more celestial sights.

Just beneath the belt of Orion is a faint patch of light that marks the hunter's sword. This is **M-42**, the **Great Orion Nebula**. A small telescope can reveal the overall shape of the nebula, as well as a quartet of young stars near the center called the **Trapezium**. These stars formed out of the gas and dust of the nebula.

Look between the constellations Leo and Gemini to find... nothing? Even under dark skies you'll have to look closely to spot the famous but faint constellation **Cancer the Crab**, shaped like an upside-down letter Y. Near the center of the Y is **M-44**, the **Beehive Cluster**. Like the Pleiades in Taurus, this open star cluster is a great target for binoculars.

Early Morning

As Earth orbits the Sun throughout the year, the constellations rise and set just a little bit earlier every day. You won't see much difference from night to night, but you will over the course of weeks or months. What we see in today's pre-dawn sky is a preview of the early evening sky in later months. Go out before dawn this month for a look ahead at the summer evening sky.

By morning, our winter constellations have long since set in the west, and even springtime constellation Leo the Lion has set. High in the east are the three bright stars that make up the **Summer Triangle**. To the south is the J-shaped **Scorpius the Scorpion**, with the red star **Antares**. Look for the Moon near Antares in the early morning of April 27.

For an extra challenge, look low to the east before sunrise for both **Saturn** and **Mars**. As the month continues, Saturn will gradualy rise earlier and appear higher at sunrise, while Mars will stay low and won't be much easier to see until late May or June.

How Dark is Your Sky?

City lights make it difficult to experience the night sky at its best. Does excess light streaming into your window make it hard for you to sleep? Light pollution can disrupt wildlife in a similar way. Light pointing up into the sky is also a needless use of electricity. Better lights that just point downward still do the job we need them to do, but without all those side effects.

To learn more about light pollution, visit the **International Dark Sky Association** at darksky.org.

Globe at Night (globeatnight.org) is a monthly citizen science project to map the effects of light pollution around the world. Visit their web site for instructions on how to judge how dark your local sky is. In short, you'll count the stars you can see in a particular constellation and report your reults online. In April, you'll count stars in Leo the Lion. You may be surprised how much of the night sky you're missing!

This Month in the Sudekum Planetarium

NIGHTWATCH

Habitat Earth

TO WORLDS BEYOND

JOURNEY THROUGH THE SOLAR SYSTEM

SUDEKUM PLANETARIUM

AT ADVENTURE SCIENCE CENTER

April 2024 - Solar Eclipse Edition

After Sunset

Look low in the west as the sky begins to darken for the planet **Jupiter**. It may be the first point of light you see. A close look with a telescope will reveal its cloud bands and up to four of its largest moons. It will set by 10 pm near the beginning of the month, but by the end of the month it may be lost in the glow of sunset.

Look high in the north for the **Big Dipper**. As famous as the Dipper is, it's not always easily visible from our latitude in Tennessee. During the autumn, it stays hidden near the northern horizon, only to emerge in the wee hours of the morning. But in the spring, the Dipper is high in the sky, easy to find.

You can use the stars of the Big Dipper to find **Polaris**, the **North Star**. Use the two stars at the end of the bowl of the Dipper to point you to Polaris. When you face Polaris, you're facing due north.

Polaris is not a particularly bright star, but it does remain fixed in the sky throughout the night and throughout the year. Polaris is at the end of the handle of the **Little Dipper**. This group of stars is officially known as **Ursa Minor the Little Bear**. Similarly, the Big Dipper is just a part of the official constellation **Ursa Major the Great Bear**. You'll need dark skies to see the Great Bear's fainter stars.

Imagine poking a hole in the bottom of the Dipper to let the water drip out. The water falls onto the back of **Leo the Lion**. The head and mane of the lion are represented by a group of stars that looks something like a backwards question mark. Other stargazers imagine the top hook of a coat hanger, or a sickle in this group of stars. The "dot" at the bottom of the question mark is **Regulus**, the brightest star in Leo. It marks the regal heart of the lion.

Follow the curved handle of the Big Dipper to trace the 'arc' to **Arcturus**, the orange colored star in **Boötes the Herdsman**. Then speed on to **Spica**, the single bright star in **Virgo the Maiden**, low in the southeast. Neither of these constellations has any other bright stars. Even under dark skies away from city lights, it's hard to imagine these mythological figures just by connecting the dots.

Look low to the west for our last glimpses of winter constellations. **Orion the Hunter** stands out early in the month, but will be lost in the glow of sunset by May. Follow Orion's belt to the left to find the brightest star in the night sky, **Sirius**, in **Canis Major the Big Dog**. Follow the belt stars to the right to find orange star **Aldebaran**, the eye of **Taurus the Bull**.

Keep going past Aldebaran in the same direction to find a beautiful cluster of stars known as the **Pleiades**. To some eyes it looks like a miniature version of the Little Dipper. Under dark skies most people can see six stars, but under excellent dark-sky conditions, people with good eyesight can see seven. With a small telescope or a pair of binoculars, you may see dozens! The Pleiades is an example of an **open star cluster**.

Draw a line from Orion's blue-colored foot **Rigel** up through red star **Betelgeuse**, and keep on going until you run into **Gemini the Twins**. The bright stars **Castor** and **Pollux** mark the heads of the twins from ancient mythology. Under dark skies you may just be able to pick out two stick-figure bodies leading back towards Orion.

Early Morning

By the pre-dawn hours, our winter constellations have long since set in the west, and even springtime constellation Leo the Lion has set. High in the east are the three bright stars that make up the **Summer Triangle**. To the south is the J-shaped **Scorpius the Scorpion**, with the red star **Antares**.

Before you set your alarm for the wee hours of the morning, consider planning out your observing. Desktop planetarium software like the free, open-source Stellarium (stellarium.org) can show you more precisely where night sky objects can be found on any date and time, and help you plan ahead.

TOTAL SOLAR ECLIPSE - APRIL 8, 2024

The big day is almost here! On Monday, April 8, 2024, the Moon will cast its shadow on the Earth. A **total solar eclipse** will cross a narrow path from Mexico to Maine. Observers in the path of totality will see the Moon completely block the face of the Sun. Outside of the path, observers will only see a **partial eclipse**. If at all possible, get to the path of totality. It's an astronomical event you don't want to miss!

Nashville is *not* in the path of totality!
Visit the interactive map at
https://nso.edu/for-public/eclipse-map-2024/
To see where the eclipse will be total.

Safety First

Staring at the Sun is a bad idea on any day. There's nothing extra dangerous about a solar eclipse, except that people are naturally curious and will *want* to look at the Sun. Don't do it!

While you wait for totality, use **solar viewing glasses**. There is no other safe way to look up at the Sun. **Regular sunglasses are not safe.** Do not use exposed film, CDs or any other home-made method. None of these will protect your eyes from the intense light. Do not combine solar glasses with telescopes or binoculars - the focused, intensified light and heat will quickly burn through the filter material.

Try out the glasses before the eclipse. They are really, really dark. You will not be able to see anything with them on *except* for the Sun. If you detect scraches or holes in the glasses, throw them away and get a new pair. Certified solar glasses are available in the Adventure Science Center gift shop - supplies are limited.

Pinhole projection methods are another fun way to watch the eclipse progress. All you need to do is poke a small hole in a piece of thin cardboard, and let the sunlight pass through the hole onto another piece of cardboard. You'll see an image of the partially eclipsed Sun. Or, grab a colander from the kitchen to see lots of tiny eclipses projected. You can even look at the shadow of a tree to see hundreds of eclipses projected through the gaps between leaves.

There is only one circumstance when it is safe to look right at the Sun: totality. If the Sun is totally eclipsed from your location, you can take off the glasses to see a cosmic spectacle that people will travel around the world to see. With the Moon completely blocking out the face of the Sun, you'll see the magnificent corona, the Sun's outer atmosphere. As soon as totality is over, put the glasses back on.

The corona this year may be even more spectacular than the total eclipse seen in the US in 2017. The eclipse in 2017 occurred while the Sun was in a lull in its 11-year cycle of activity, and the corona was relatively plain. In contrast, the Sun is now approaching its peak of activity. The corona observers see next month may be larger and more striking than before, with wispy streamers and other beautiful structures.

What Time?

The time and duration of the eclipse depend greatly on your location. Here's what will happen at Adventure Science Center:

Partial Eclipse begins 12:44 pm CDT: The Moon slowly begins to block out the Sun. As time progresses, more and more of the Sun will be hidden.

Maximum eclipse at 2:03 pm CDT: The Moon is now covering 95% of the Sun's face - the most that will be seen from Nashville. It will still require eclipse glasses or other methods to observe safely. Even now, do not look directly at the Sun. From this point onwards, the Moon will gradually cover up less of the Sun's face until the eclipse is over, at about **3:20 pm CDT**.

For more information about solar eclipses and how to watch them safely, visit science.nasa.gov/eclipses.

If your location is out of the path of totality, you must use solar glasses or other safe observing methods at all times.

Visit the Sudekum Planetarium this month to see ***Eclipse: The Sun Revealed*****, showing through April 8, to learn more about this exciting astronomical event!**

This Month in the Sudekum Planetarium

~~NIGHTWATCH~~

ECLIPSE
THE SUN REVEALED

TO WORLDS BEYOND
JOURNEY THROUGH THE SOLAR SYSTEM