Introduction

Stargazing is an activity that people have enjoyed for millennia.

Knowing the stars and constellations by name adds to the pleasure for a casual stargazer and provides a student with the foundation for learning more advanced astronomy.

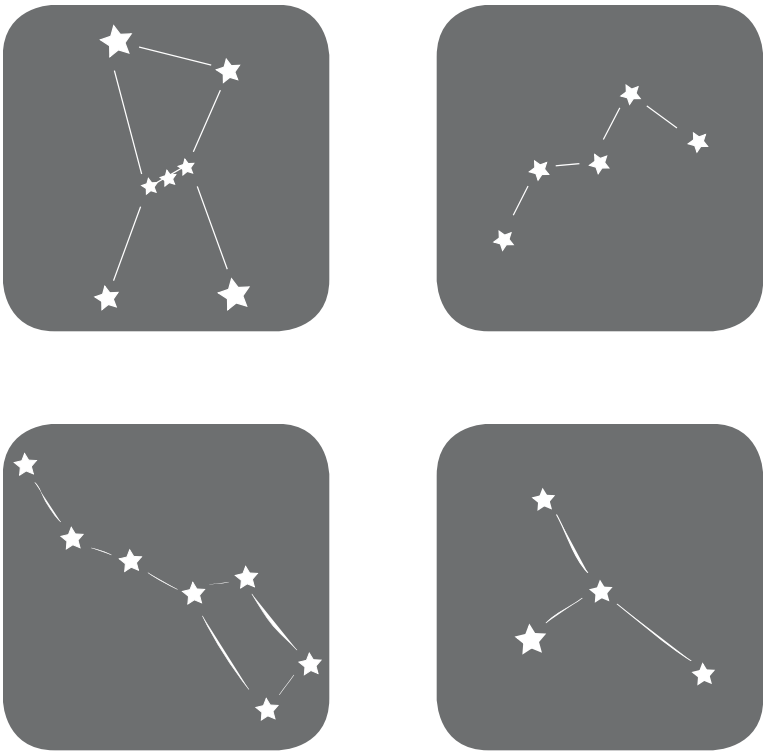
In this book, you will learn all the important stars and constellations that can be seen from the Northern Hemisphere.

You will know what can be seen, when it can be seen, and where to find it. And you'll be given a unique framework to help you make sense of it all.

The night sky is divided up into simple-to-remember zones, each with their own story about the constellations.

After you can recognize the main patterns in the sky, more detail is added until you are able to identify every bright star.

With this approach, learning about the stars is fun and easy. When we're done, you'll be able to look up in the night sky with a confident smile, knowing with certainty which stars you're viewing. You'll know which direction the stars came from, where they are going, and what you can expect to see at any time of the night, any night of the year.



Four Guidepost Constellations

Throughout the ages astronomers have named the bright stars and defined **constellations** so they could remember and communicate what they saw. A constellation is a group of stars that has been given a definite name, such as Orion or Taurus.

We're going to start with just four constellations. These four are famous for being easy to find and satisfying to view. Once you know these famous four, it's simple to learn everything else.

We call these four basic constellations **Guideposts**, because they mark different areas of the sky and we use them to find our way.

Orion

Big Dipper

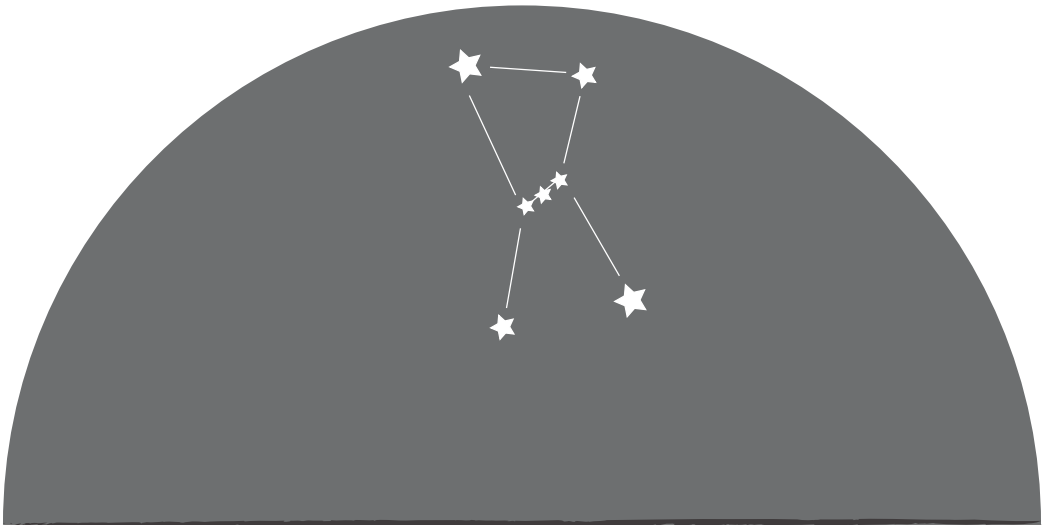
Cygnus

Cassiopeia

We need Guideposts so we know what part of the sky we are looking at and so our eye has a consistent place to start from when we look up.

Orion, the Big Dipper, Cygnus, and Cassiopeia are the natural Guideposts for people who live north of the equator. They occupy strategic locations and are easy to find, even if viewing conditions are poor.

Let’s take a look at them one at a time.



Orion

Let's start with Orion.

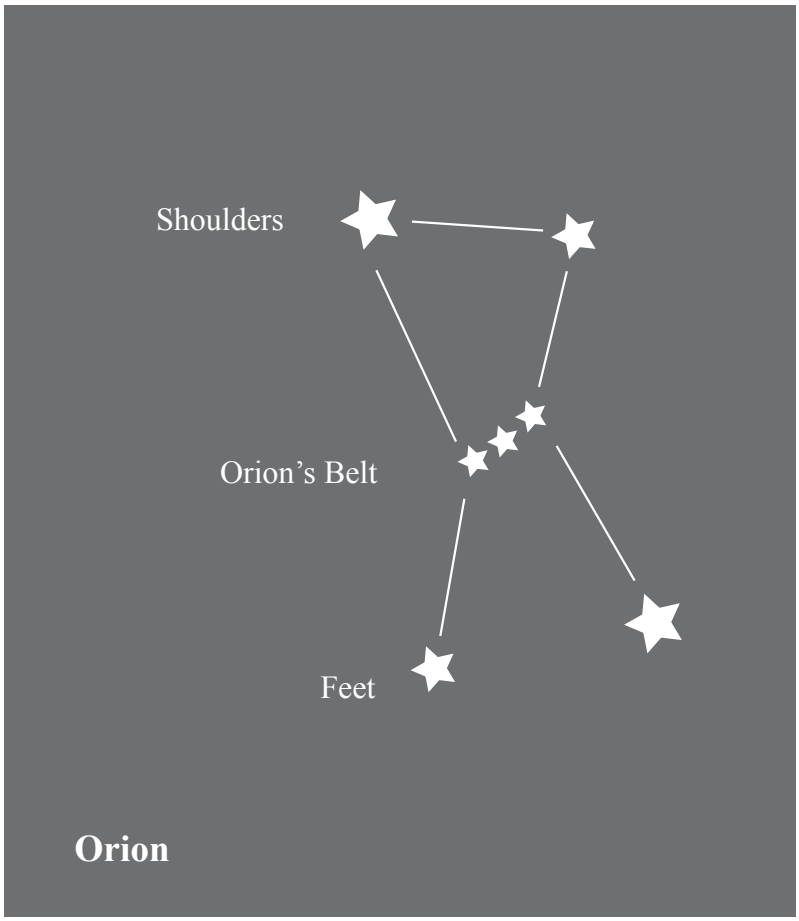
Orion has a very distinctive, easy-to-find shape. He appears high overhead for optimal viewing, and has more bright stars than any other constellation.

Orion has three distinct parts.

His shoulders are the topmost stars you see.

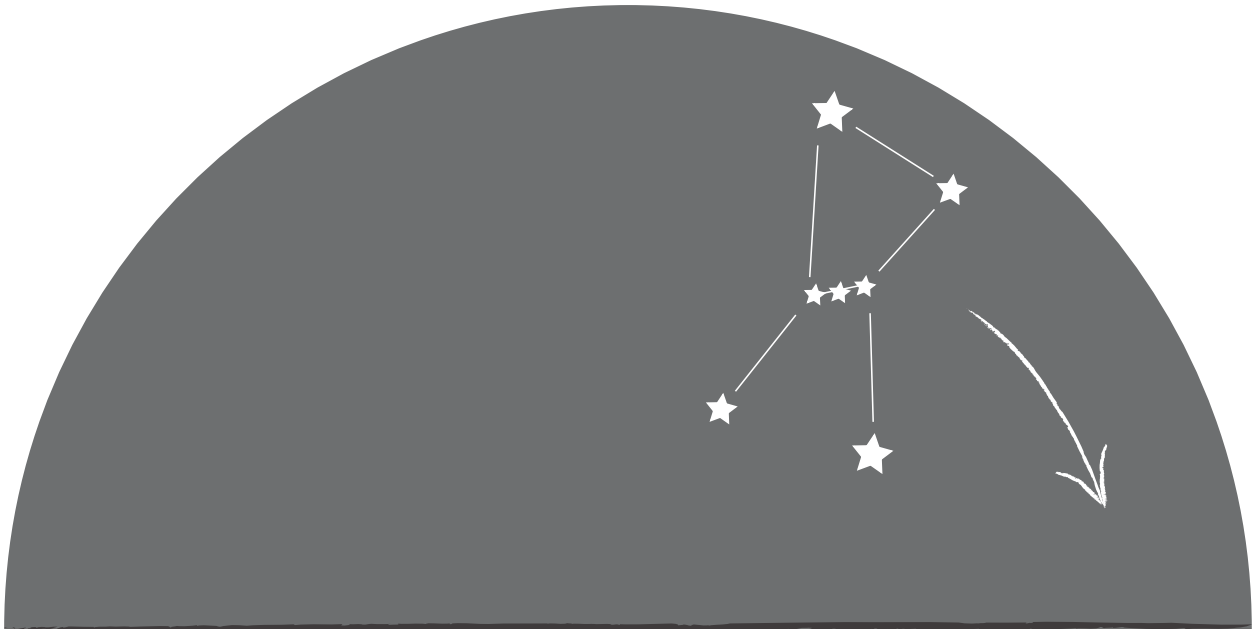
Orion's Belt is his most famous feature. It goes right across his middle, three bright stars in a row.

Two stars form his feet and complete the picture.

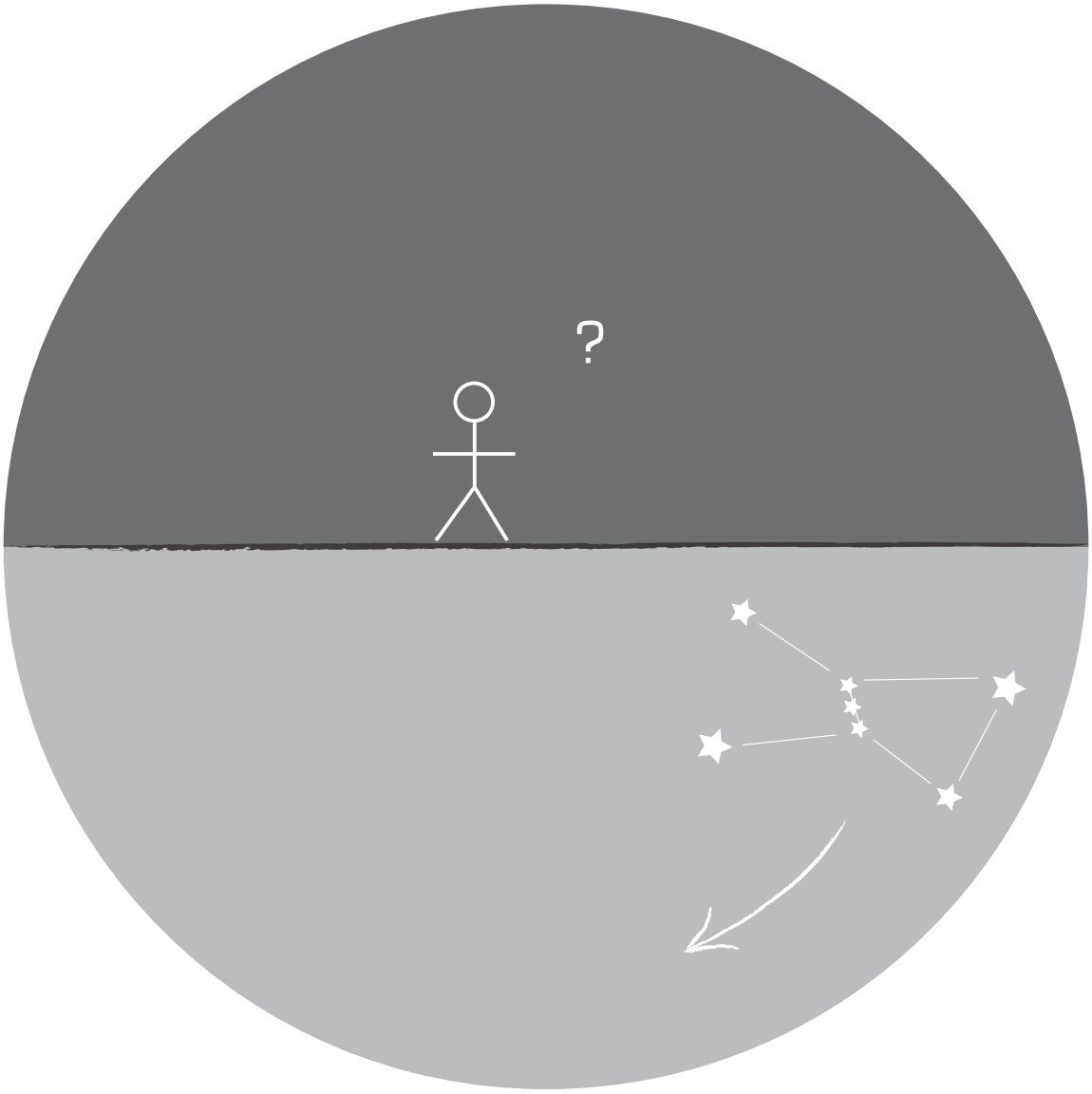


Orion is so easy to find, and so distinctive, that we'll use him as our main Guidepost.

Once we know how to find Orion, we'll use him to locate all the rest of the stars.



If Orion stayed in one place all the time, then everyone would be able to find him on any starry night, and learning the constellations would be a cinch. You could simply remember, “Orion appears just over that tree.” But like all the constellations, Orion is constantly on the move.

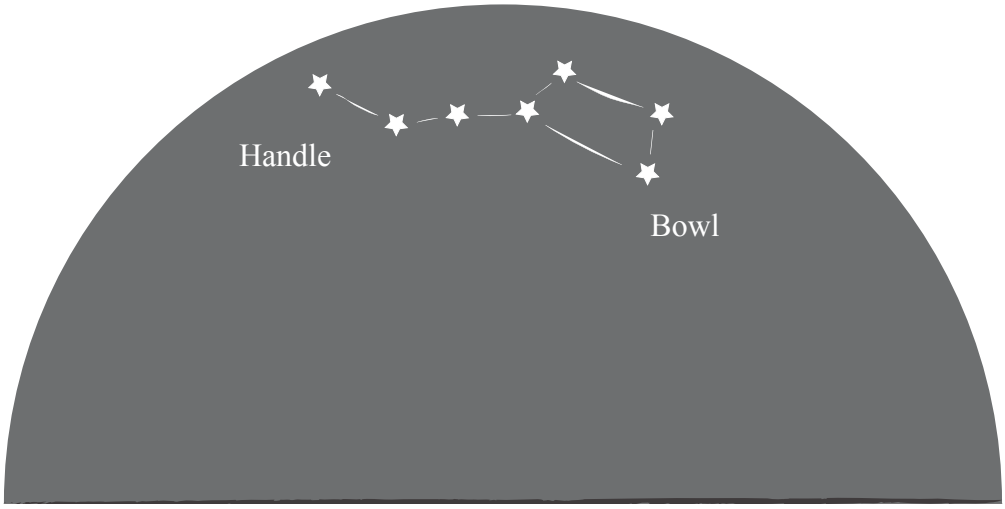


Sometimes Orion is not visible at all. That's why we need all four Guideposts, not just one.

Let's continue on and take a look at the other three important Guidepost constellations.

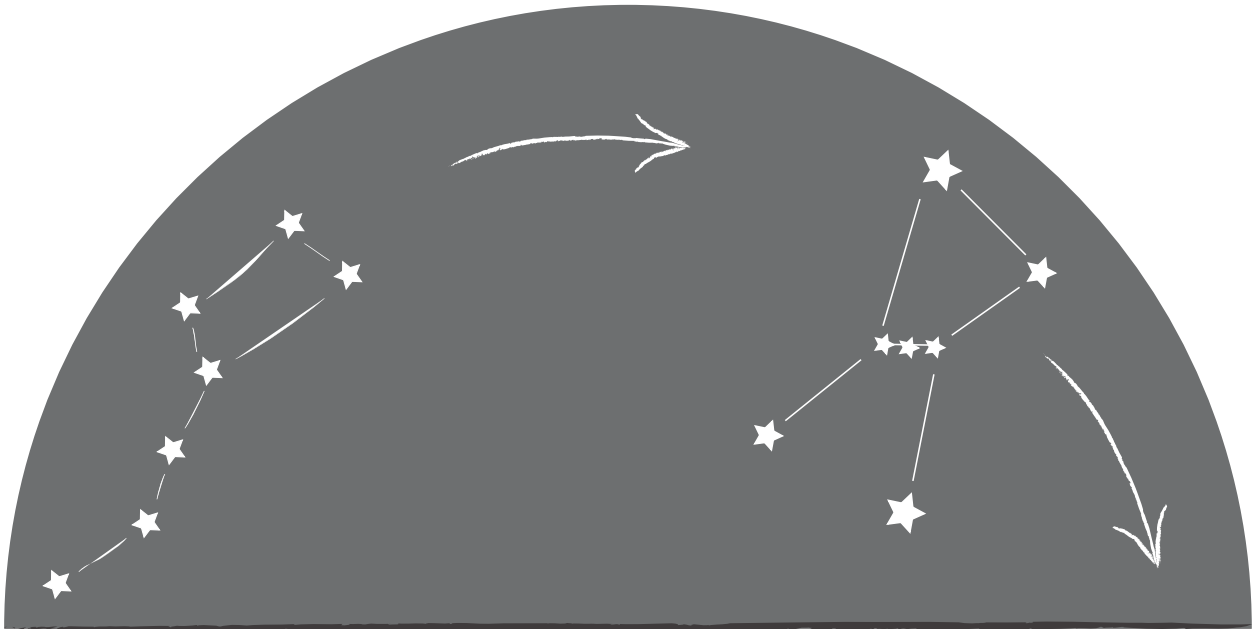
Big Dipper

We use the Big Dipper as our second Guidepost. (The Big Dipper is technically not a constellation, but an **asterism**. An asterism is a cluster of stars that stand out, but is not one of the official 88 constellations.)



The Dipper has four stars that form a bowl and three that form a handle. All seven stars are similar in brightness.

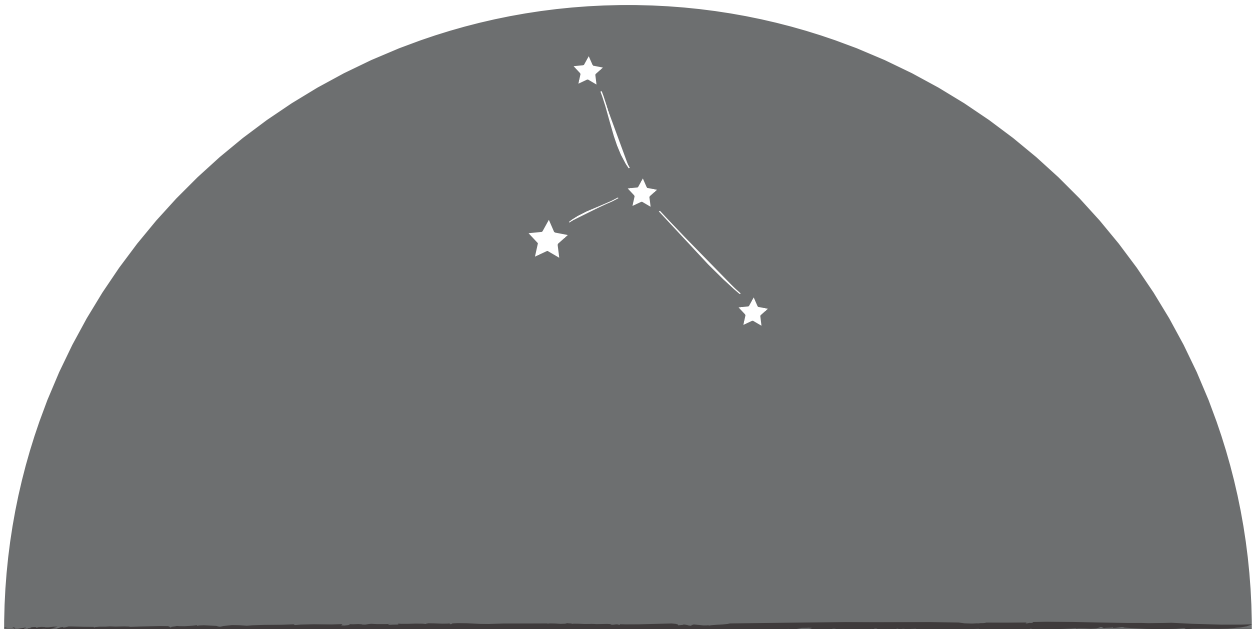
When the Big Dipper is high in the sky, it appears to be upside-down.



The Big Dipper follows Orion across the sky, so when Orion starts getting too low to be an effective Guidepost, the Dipper takes over.

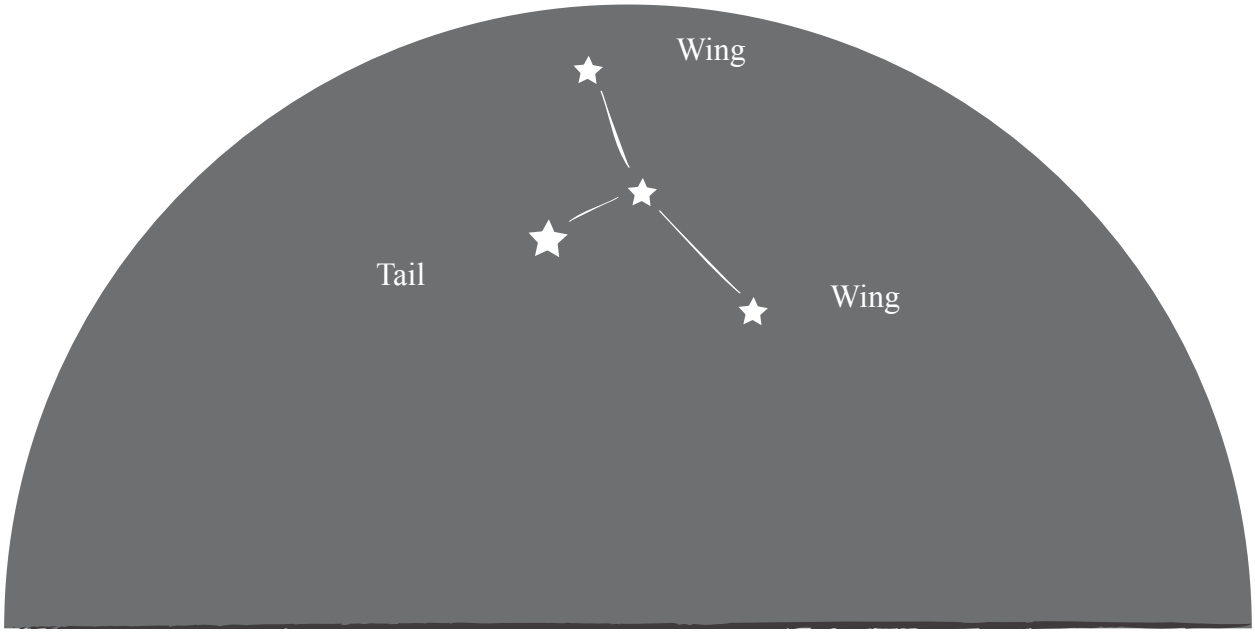
The Big Dipper moves across the sky, leading with its front lip and its handle following behind.

Our next Guidepost is not as famous as Orion or the Big Dipper, but it is just as easy to find.

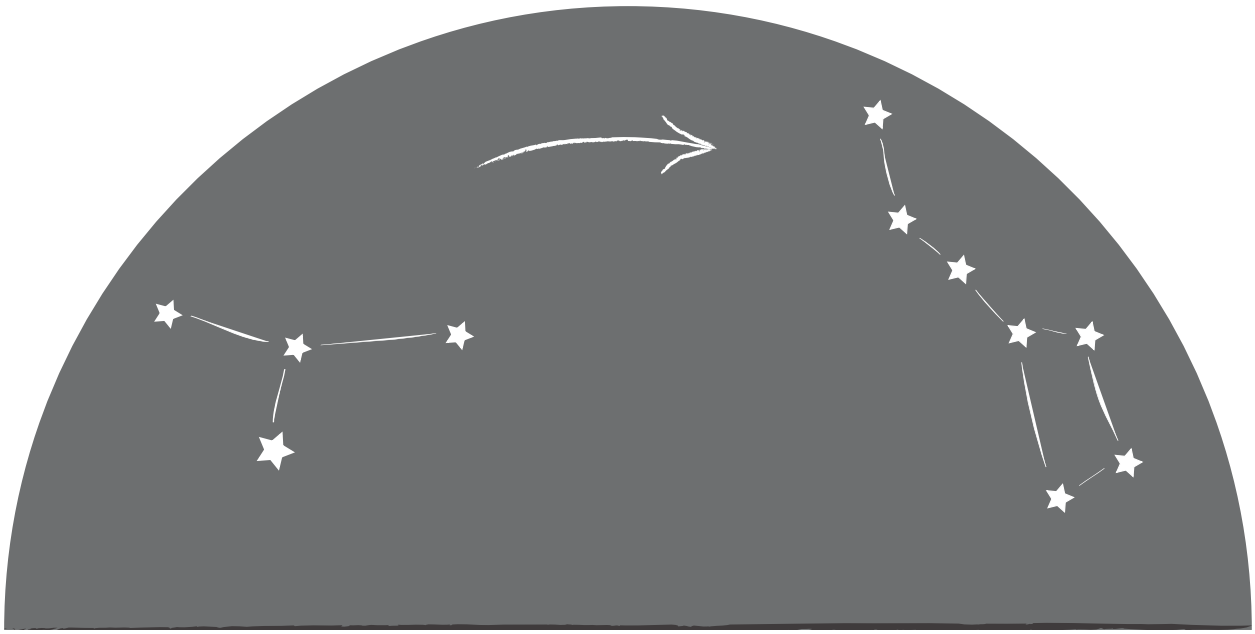


Cygnus

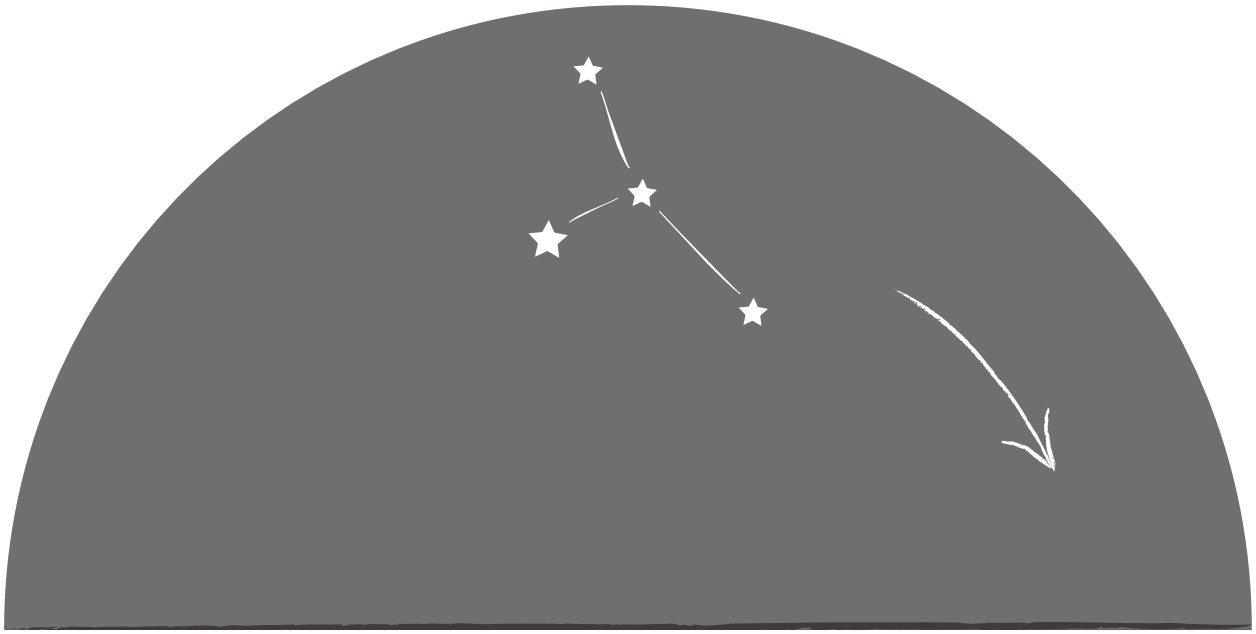
Cygnus is our third Guidepost constellation. Cygnus is a T-shaped group of stars that represents a swan. On a dark, clear night more stars are visible that make it really look like a bird, but for starters, just look for the T.



The Swan's brightest star is in its tail.

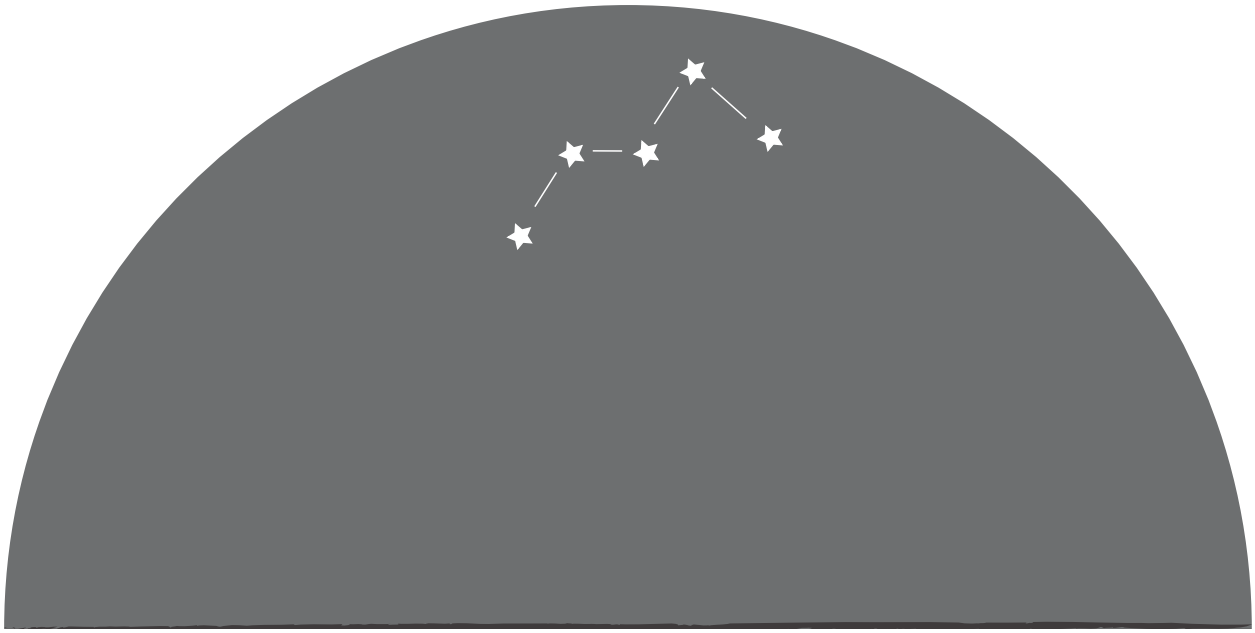


Cygnus follows the Big Dipper across the sky, taking over as Guidepost as the Dipper gets low in the sky.



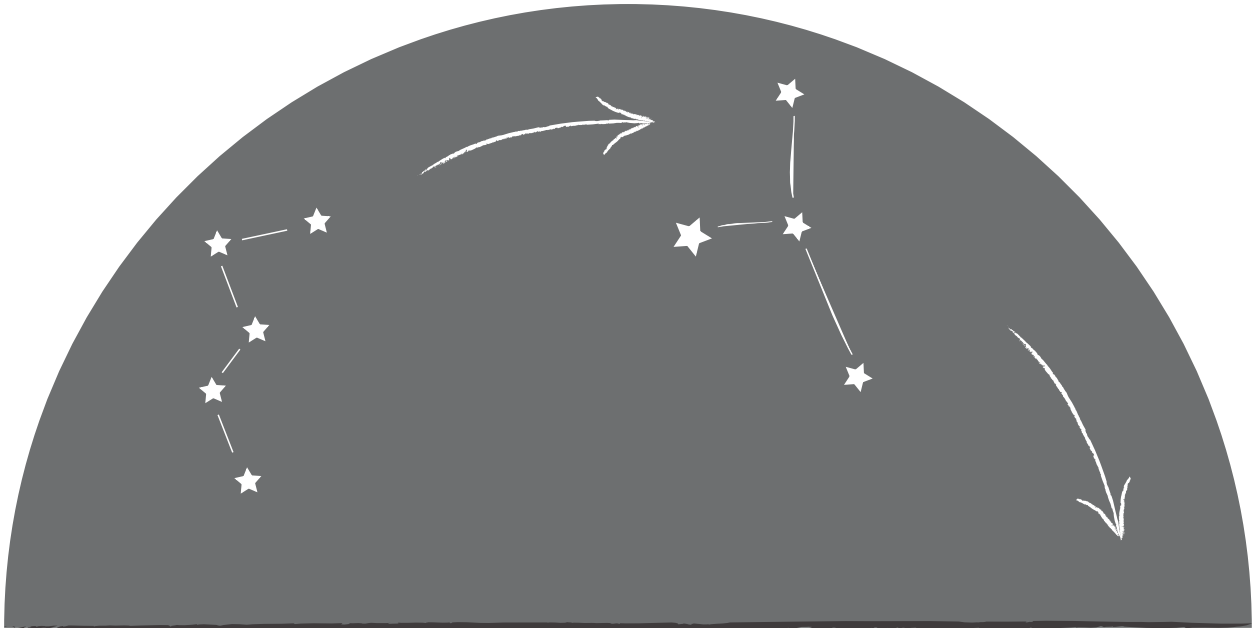
The Swan moves sideways as it travels, leading with one wing.

Our fourth and final Guidepost, Cassiopeia, is also easy to find, but it looks nothing like what it is supposed to represent.

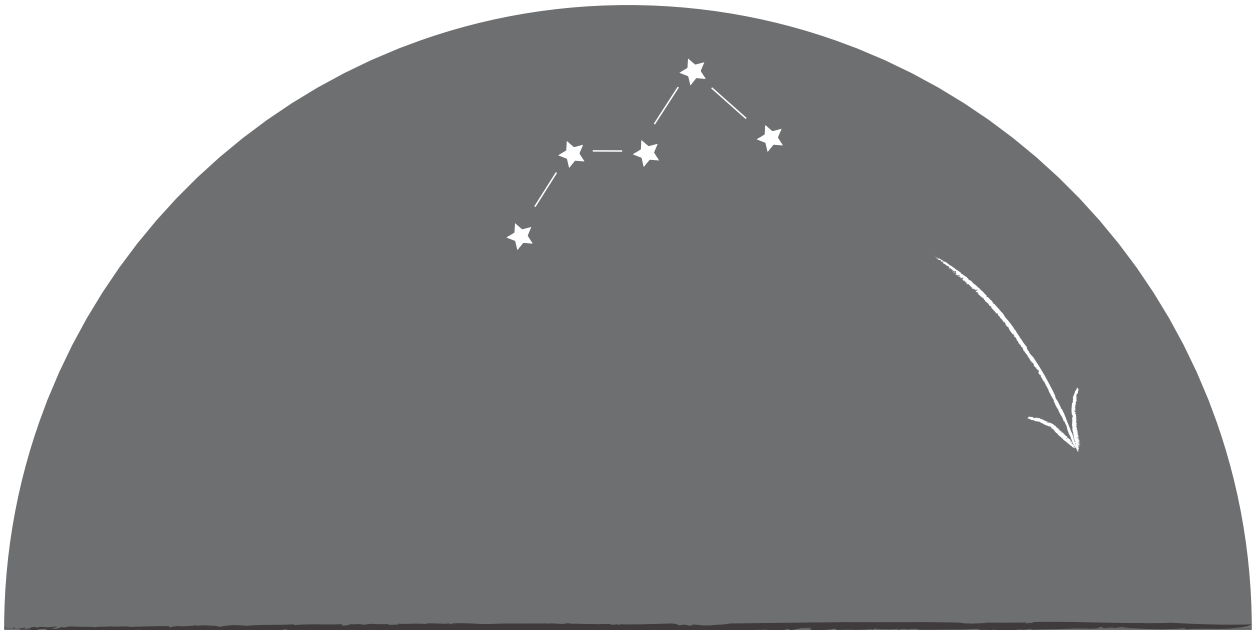


Cassiopeia

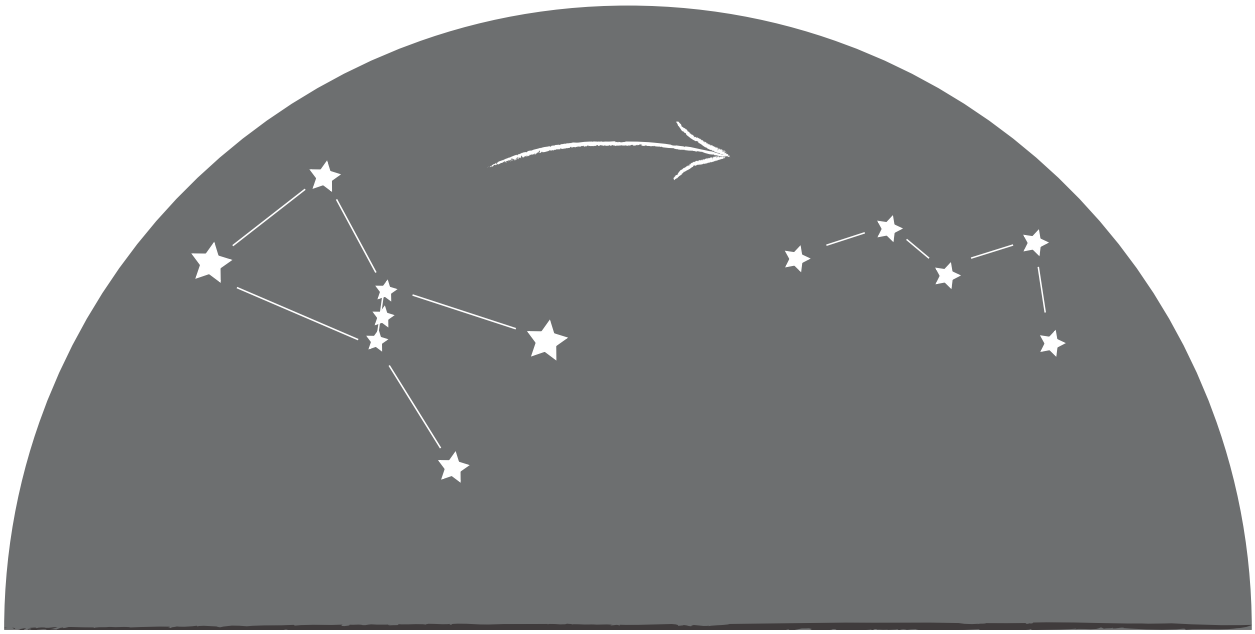
Cassiopeia is a queen, but it's kind of a stretch to see a queen, or even a person represented by these stars. The best way to describe Cassiopeia is that she looks like the letter M, or an upside-down W.



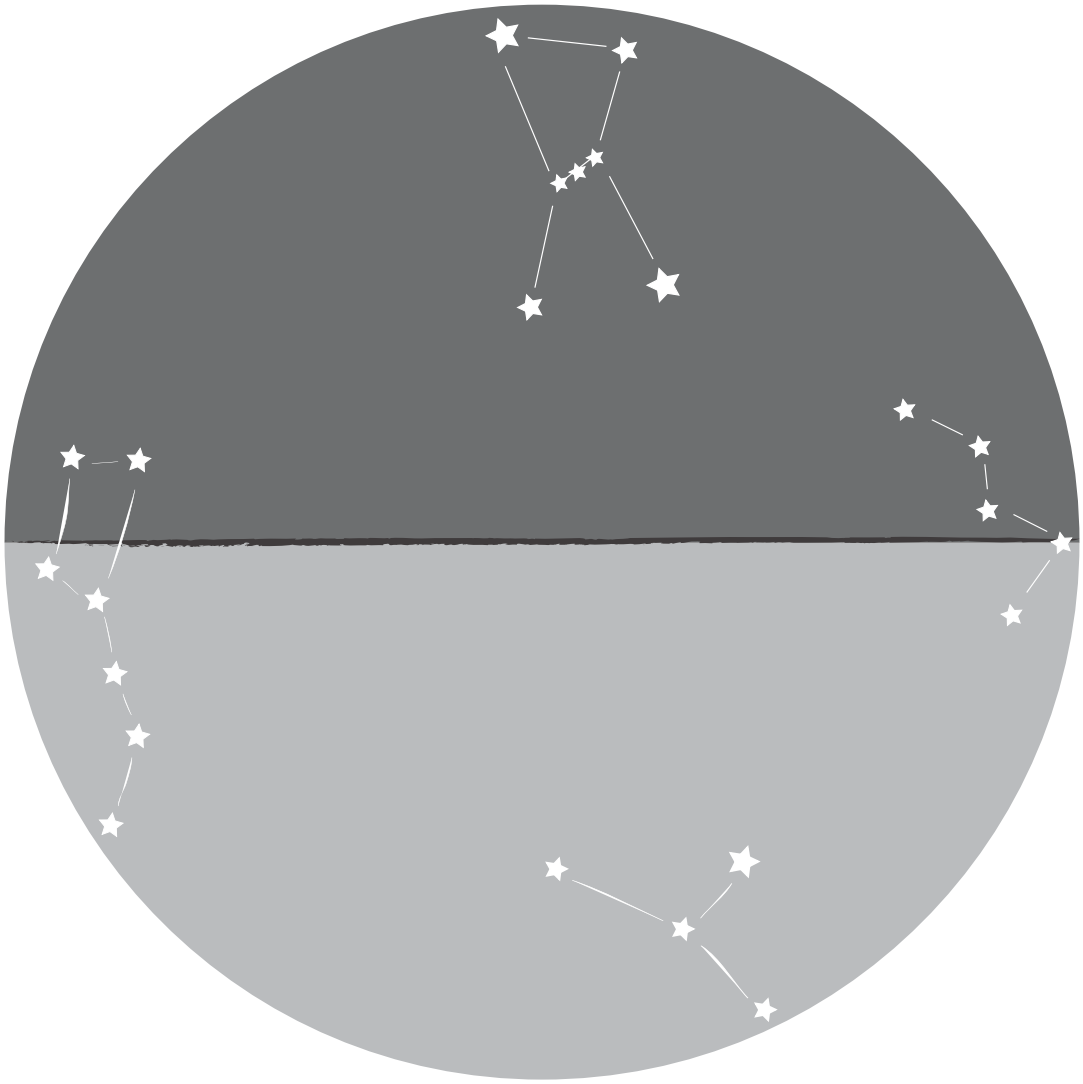
Cassiopeia follows the Swan.



As the Swan sets, Cassiopeia becomes our Guidepost.



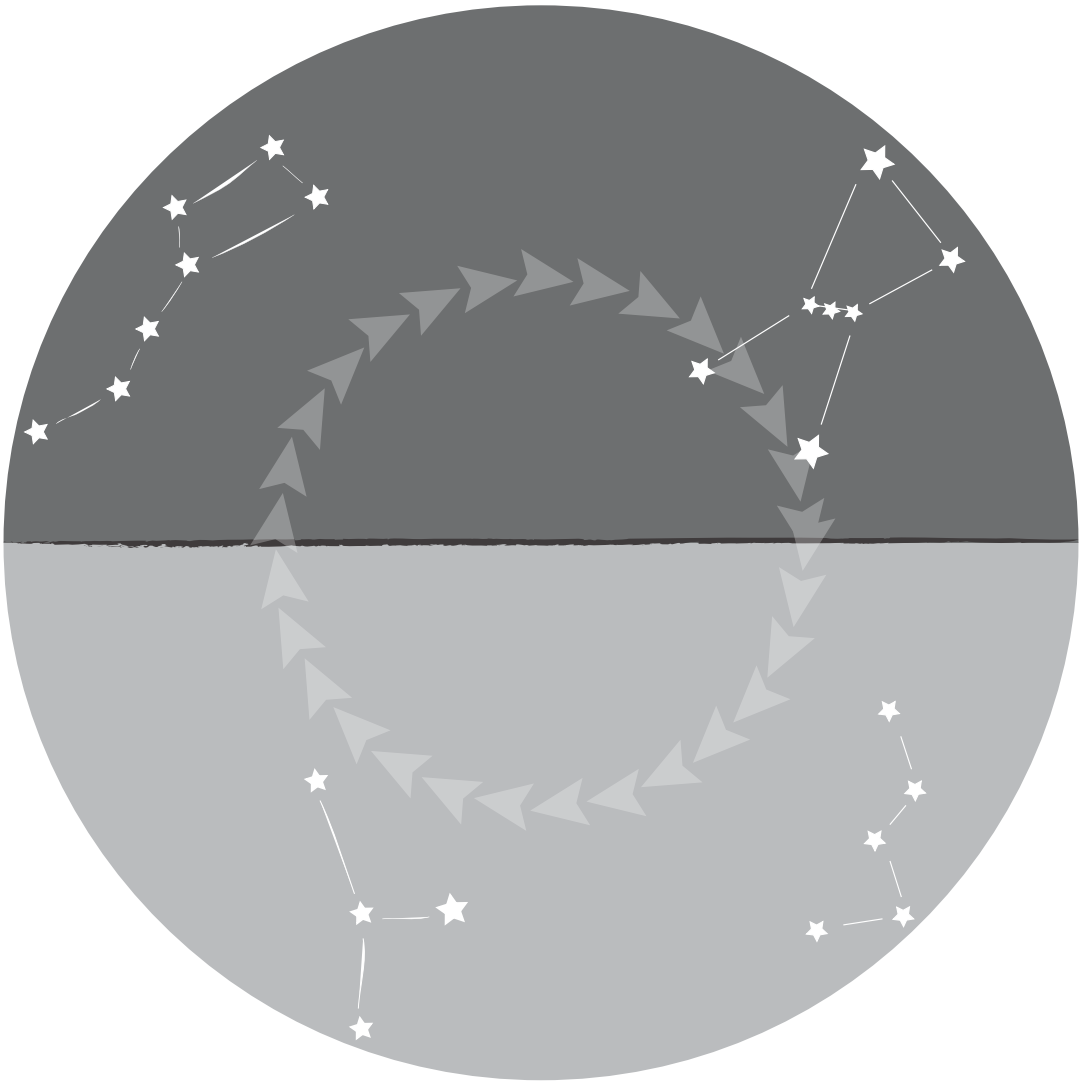
After Cassiopeia, Orion comes back around and we start all over again. If you learn these four constellations, you will always be able to find your way around the sky.



Let's see how the four Guideposts work together to always keep us oriented.

Imagine that our four Guidepost constellations are on a giant wheel in the sky. The wheel is constantly turning, carrying the stars across the sky and making about one complete revolution per day.

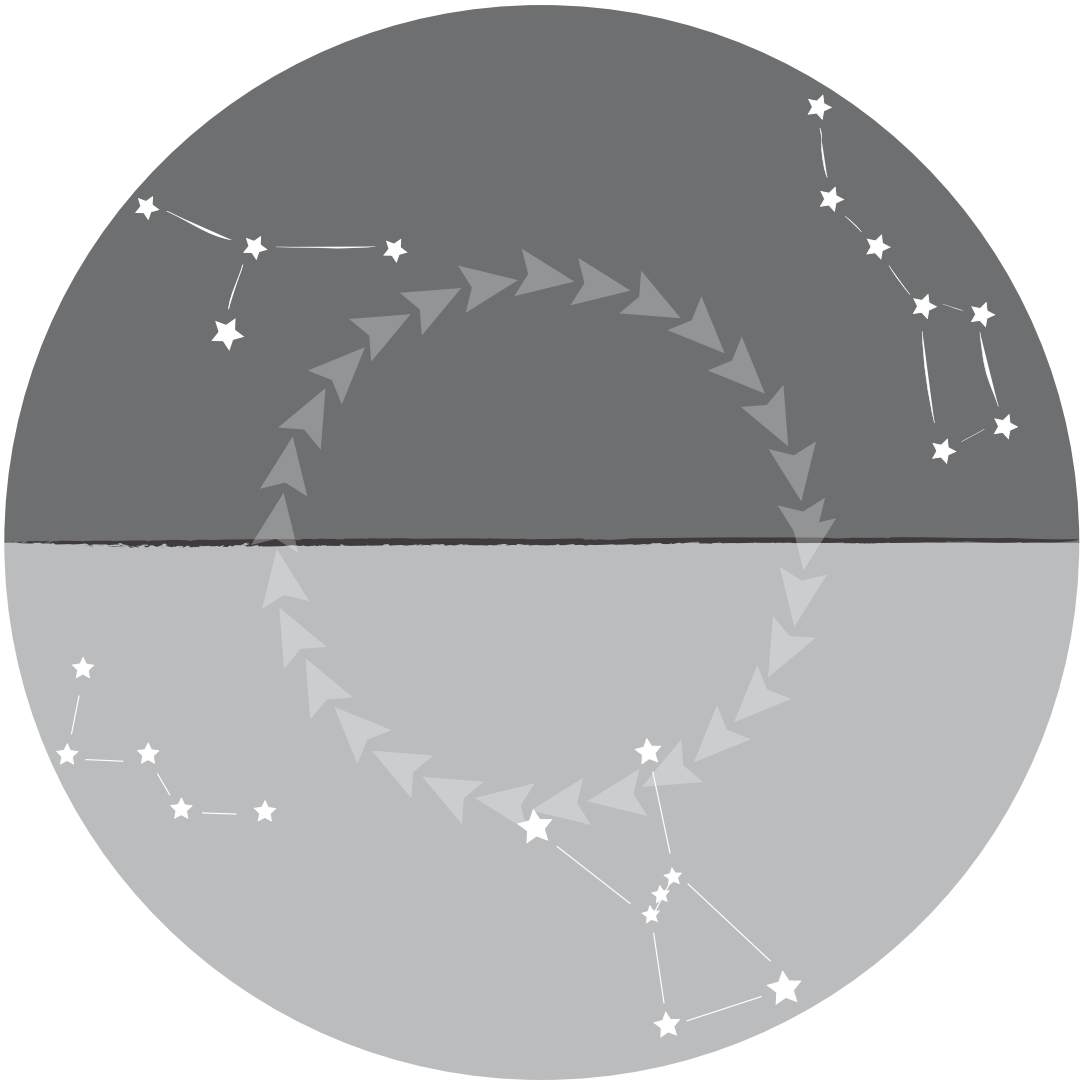
We begin our story with Orion, reigning master of the night sky. Orion travels across the sky like royalty. He contains some of the sky's brightest stars.



The Big Dipper, famous in his own right, is jealous of the Hunter.

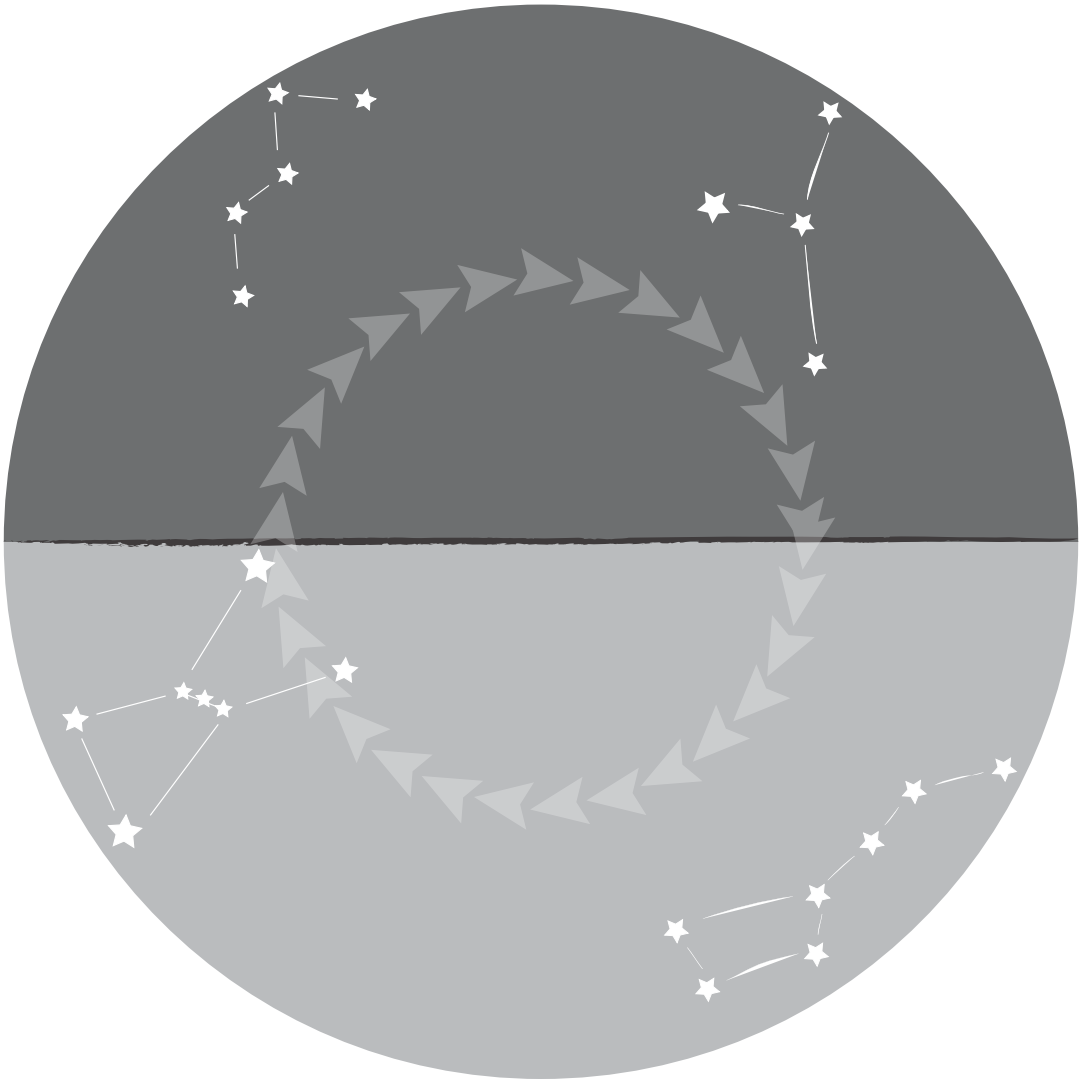
The Dipper chases after Orion, attempting to dump its ladle of water on him.

But Orion keeps on the move, and the Dipper can never get close enough to soak him.



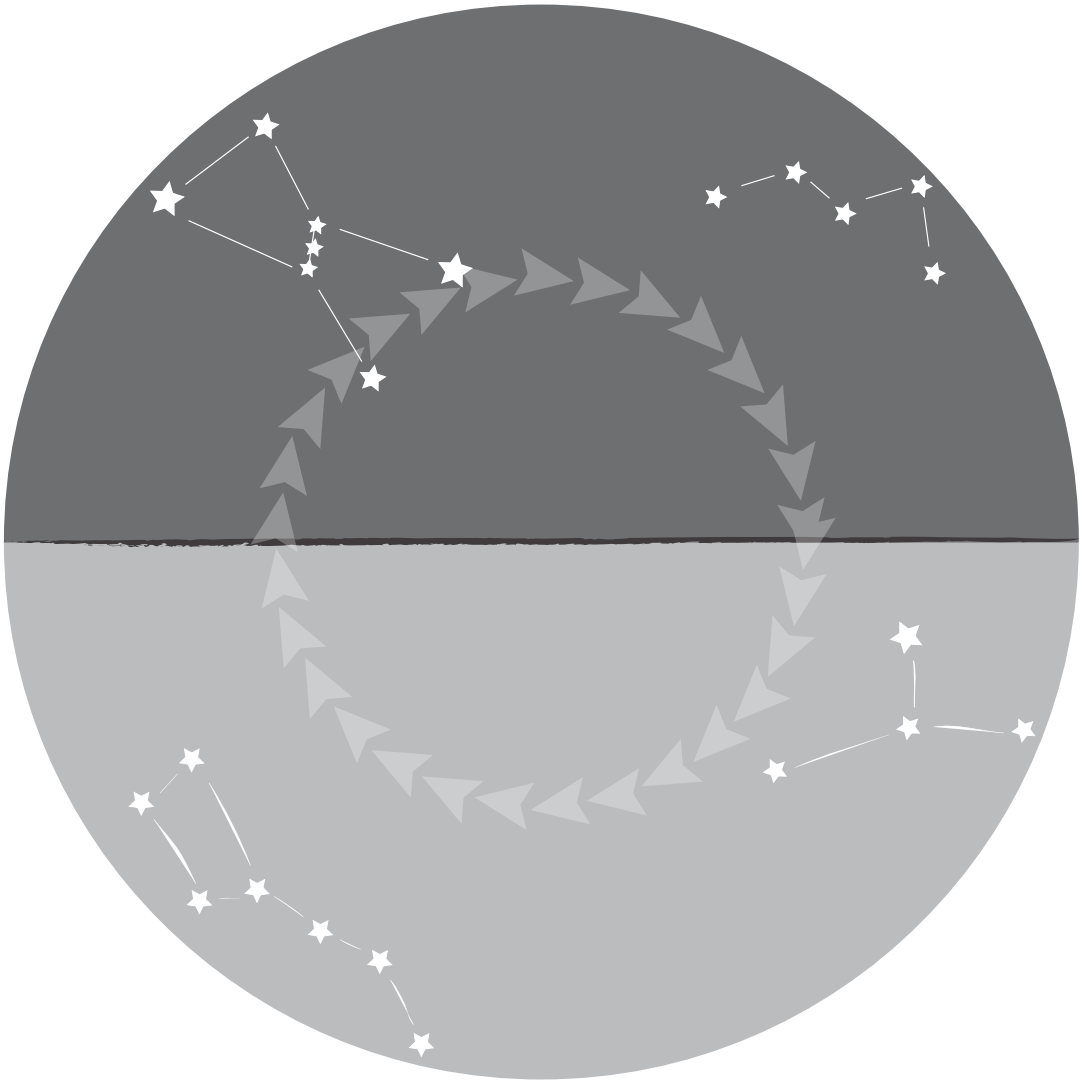
The Swan is a thirsty bird. He would love to get a drink from that dipper full of cold water.

Cygnus flies after the Big Dipper, but he can never quite get there. The Big Dipper continues to hurry after Orion.



Cassiopeia loves beautiful things, and she wants to catch the Swan for her collection.

She chases after Cygnus, but the bird always seems to elude her.



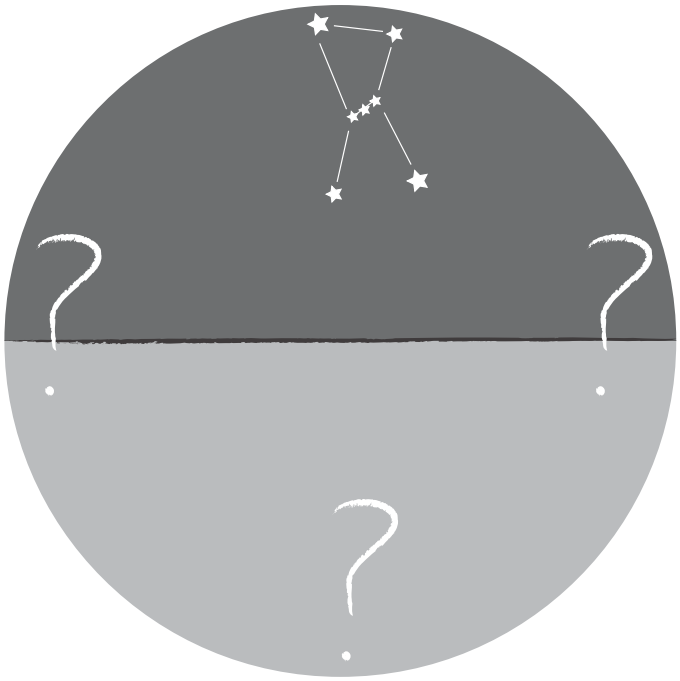
While Cassiopeia is intent on catching the bird, she attracts the attention of Orion.

The great Hunter sets his mind on pursuing the Queen, and our cycle is complete.

Remember the story of the chase around the sky and you will always be able to find the four Guideposts any time you see stars. If you can find one Guidepost, then you will know which other Guidepost is ahead of it, which is following it, and which one is opposite (and therefore hidden from view).

Try it for yourself. If you see one constellation, do you know where the others are? Can you remember who is chasing whom?

If you see Orion high in the sky, which of our guidepost constellations will be setting? Which will be rising? Which will be completely out of sight?



What if the Swan is setting in the west. Which Guidepost will be rising to take its place? (Hint: Think of who wants to catch the bird!)