

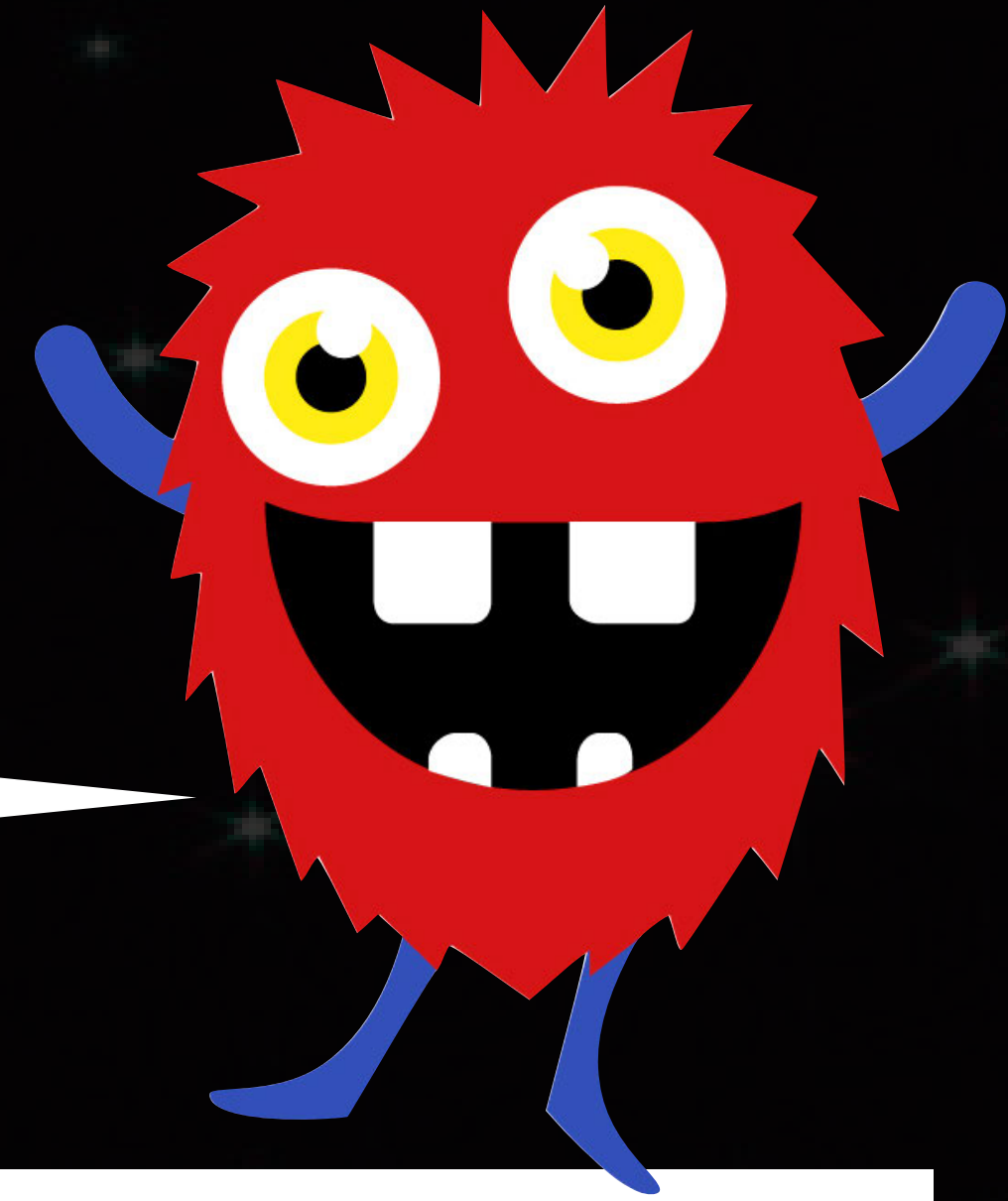
# Space

Learning Objective:

To find out what stars are to  
investigate the constellations.



How would  
you define a  
star?



Definition of a star:



BACK

NEXT



A star is a ball of gas which produces heat and light because of nuclear reactions in the star's core. Stars are different to planets because they emit their own light whereas planets only appear to shine when they reflect the light of the sun. The sun is also a star. The gas of a star is held together through gravity pulling the gases towards the star's centre.

BACK

NEXT

Do you know the answers to any of these questions about stars?



How is a star formed?



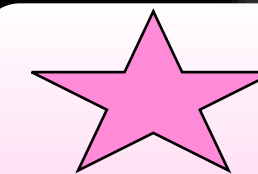
How does a star die?



What is a supernova?



Why do stars twinkle?



What are constellations?

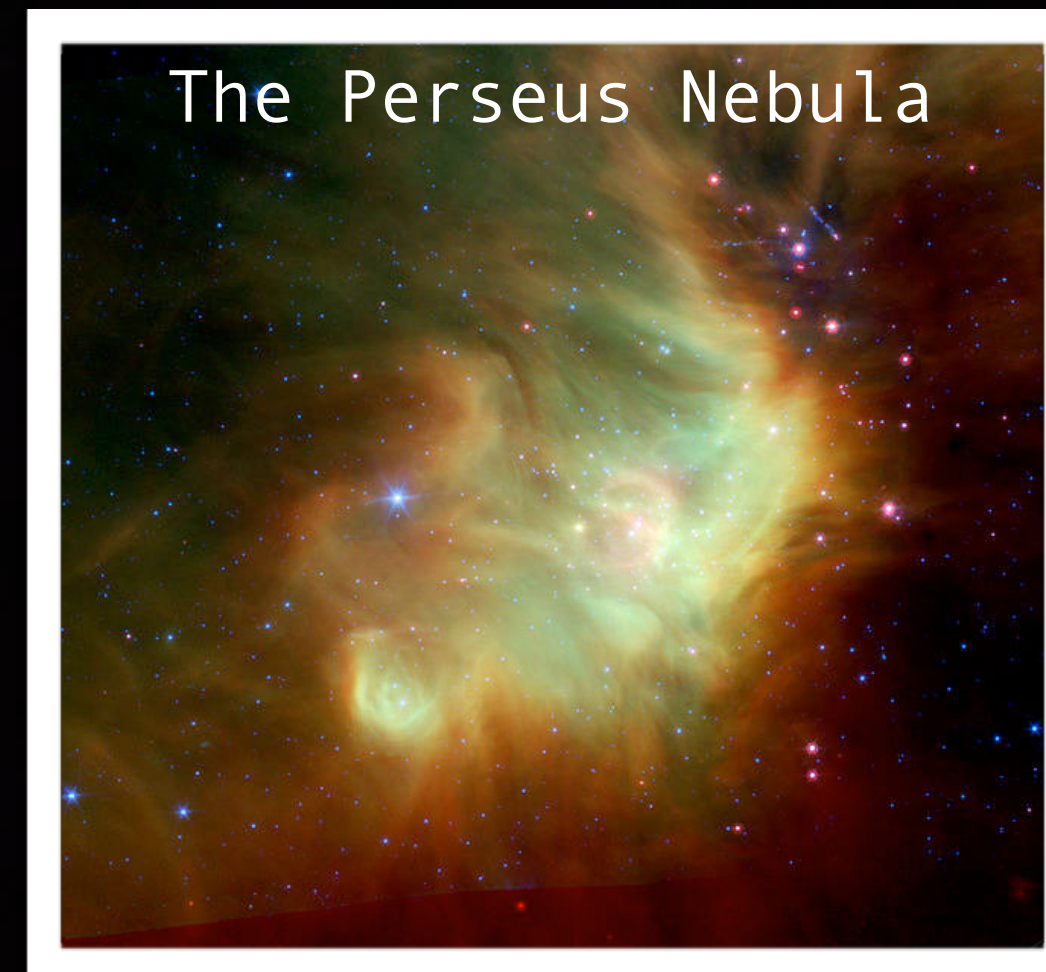
BACK

NEXT



# How is a star formed?

Stars are formed when huge clouds of gas and dust called nebulae start to form into clumps. Nebulae can look like dark clouds or can shine in bright colours. Over thousands of years these clouds get larger and larger until they collapse into each other. When this happens the temperature inside the cloud gets higher and higher as nuclear fusion takes place. The star is now born and shines brightly with the nuclear reaction in the star's core.



BACK

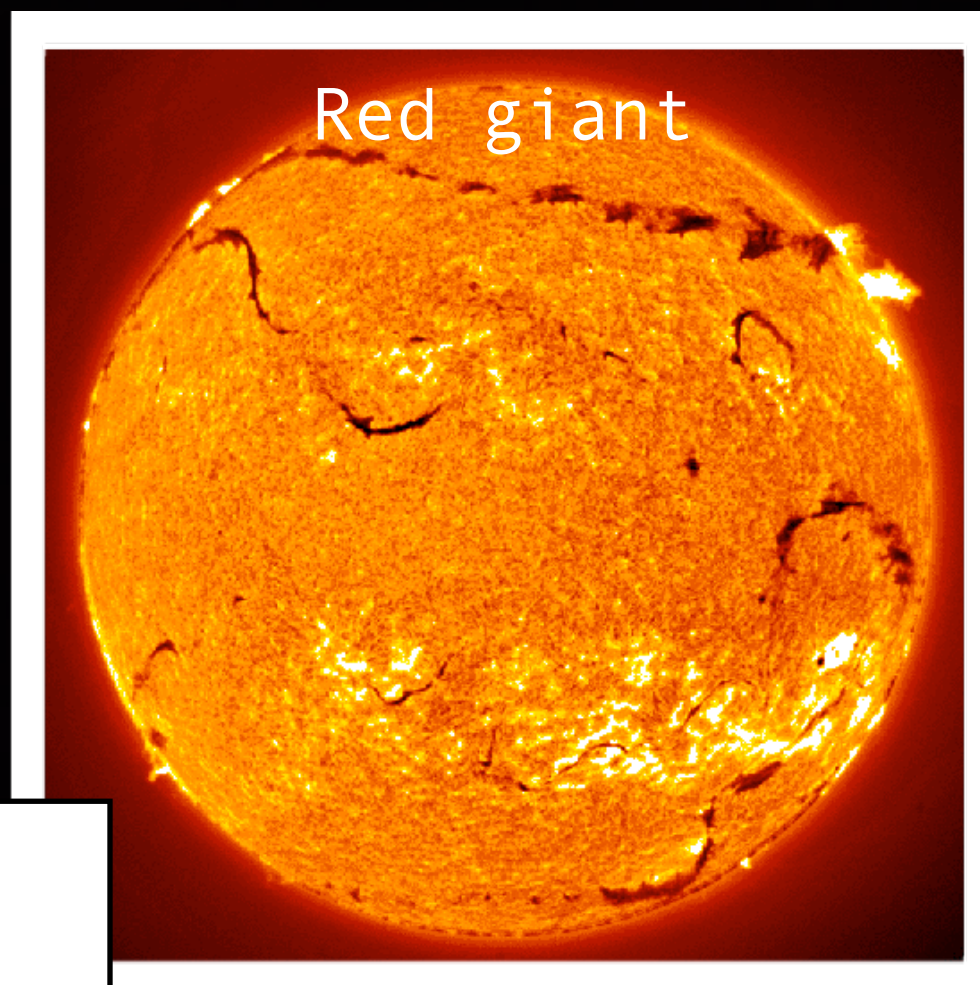
NEXT



# How does a star die?

Stars burn hydrogen and it is this gas which keeps the star alive. When the star is first born it burns very brightly and continues to do so for millions of years. Eventually, however, it will start running out of hydrogen and die. At this stage the star is called a red giant because it turns red and swells up. Finally, the outer layers of gas are released into

space and a small star which is almost dead called a white dwarf is formed.



BACK

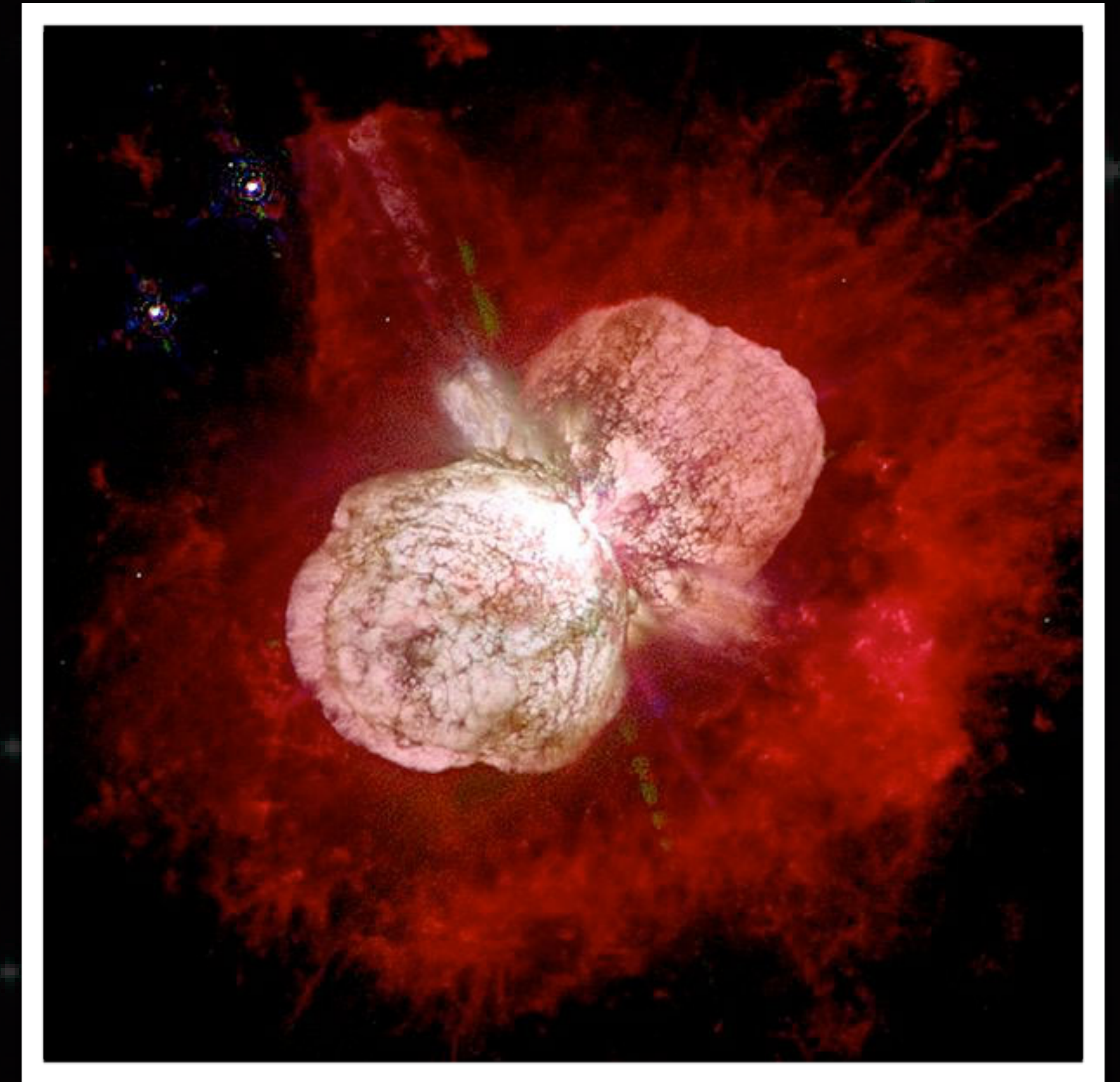


NEXT



# What is a supernova?

When larger stars die they start to form stars called red supergiants. When the nuclear reaction inside these red supergiants stops, the force of gravity causes the star to collapse in on itself causing the star to explode. This is called a supernova. Only stars that are big enough to have a sufficient force of gravity become supernovas.

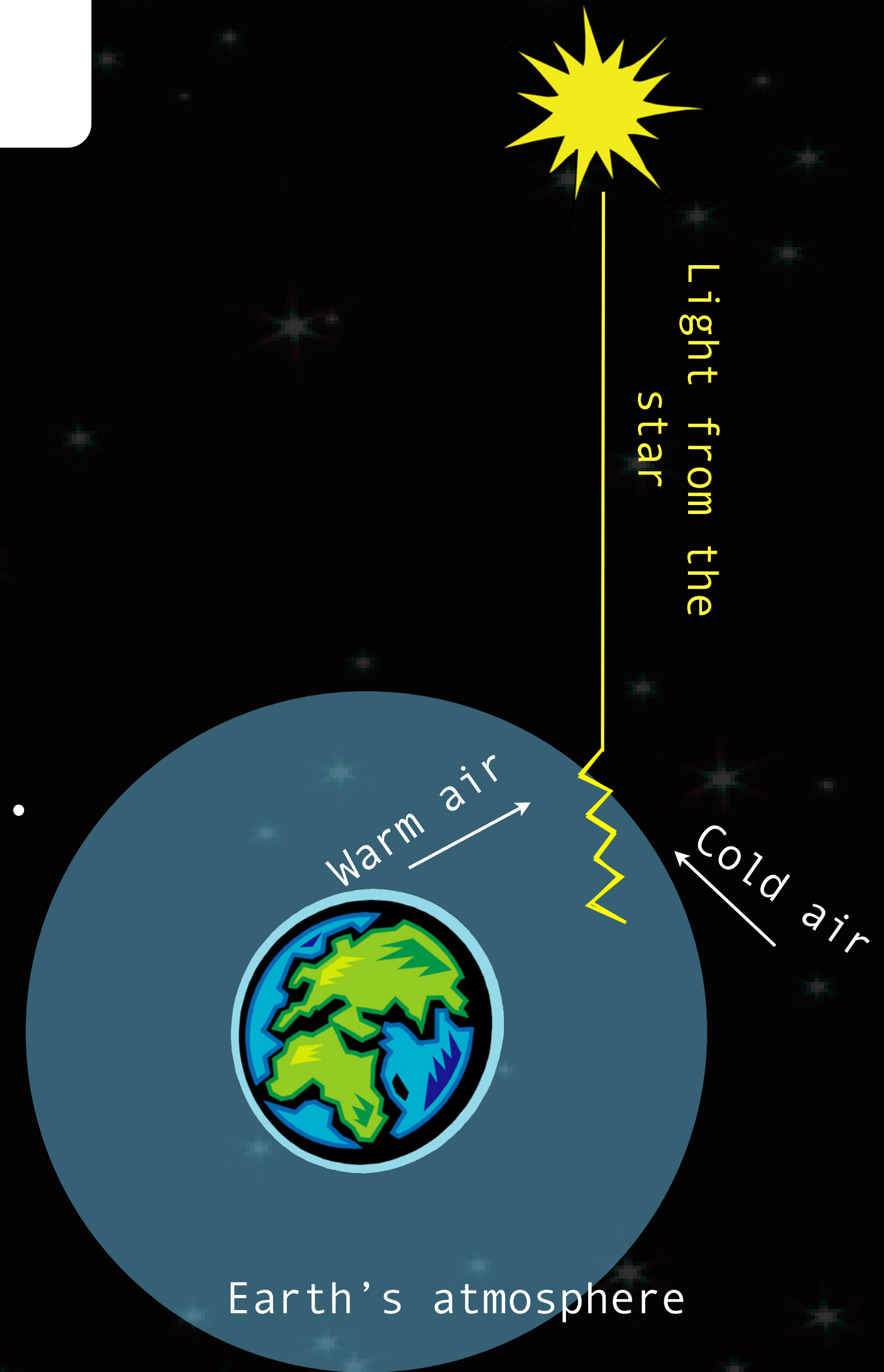


BACK

NEXT

# Why do stars twinkle?

Light travels in a straight line so why do stars appear to twinkle? The scientific name for the twinkling of stars is 'stellar scintillation' and this occurs when the rays of light from stars hit the earth's atmosphere. This is caused by pockets of warm and cold air which make the light refract (bend) giving the appearance of the light twinkling.



BACK

NEXT



# What are constellations?

Constellations help people to recognise different stars. For hundreds of years astronomers have seen patterns in the stars and used them to identify which stars are which. Constellations make imaginary shapes in the sky.



These 7 stars are the brightest in the constellation Ursa Major. Together these stars are known as The Plough or the Big Dipper. This is an important constellation because it points to the North Star (Polaris) which is above the north pole.

BACK

NEXT



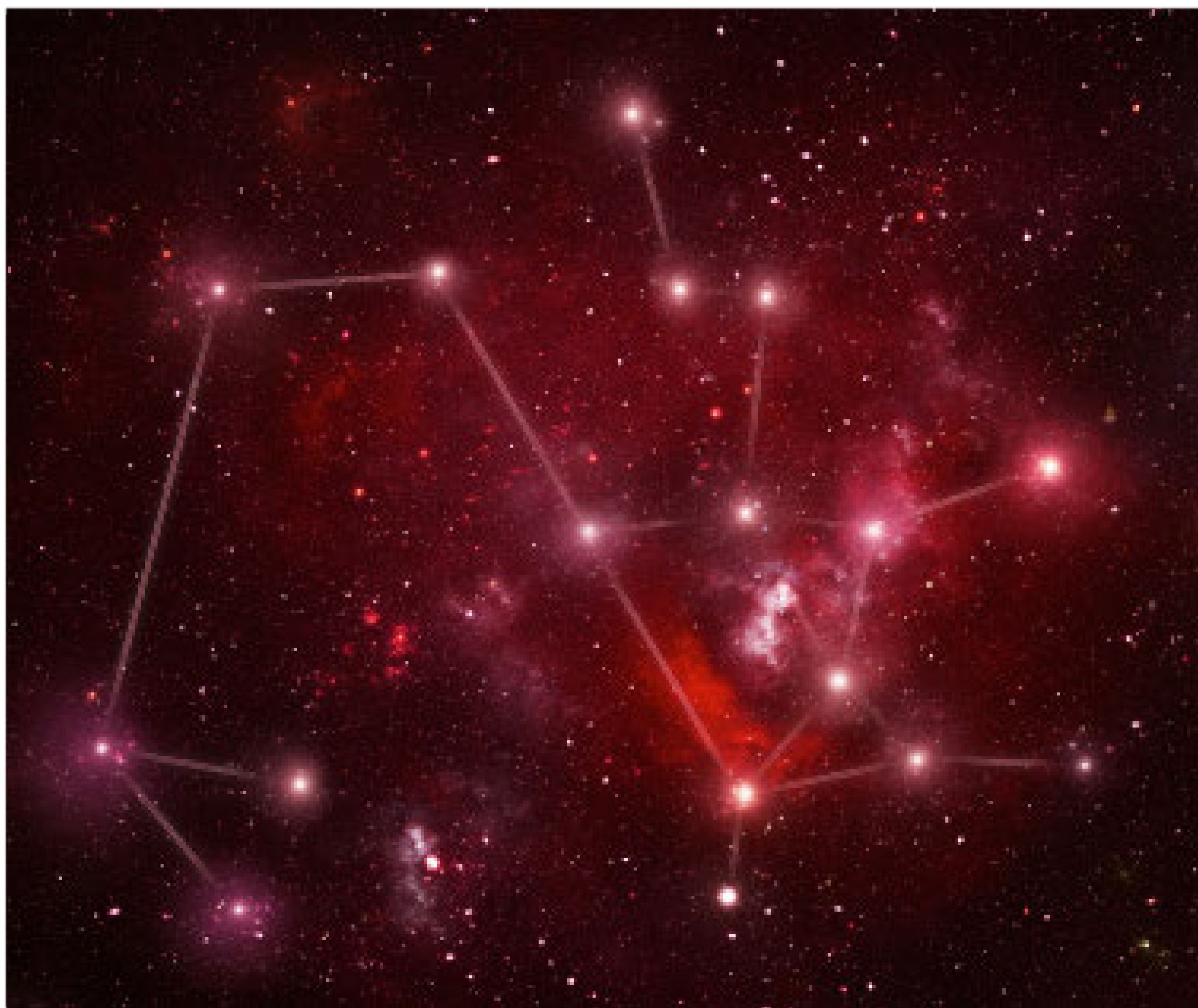
Have a look at the constellations of the zodiac on the next slides. Can you see how the shapes of the stars show the shape of the object they are representing?

BACK

NEXT



# Sagittarius - The Archer

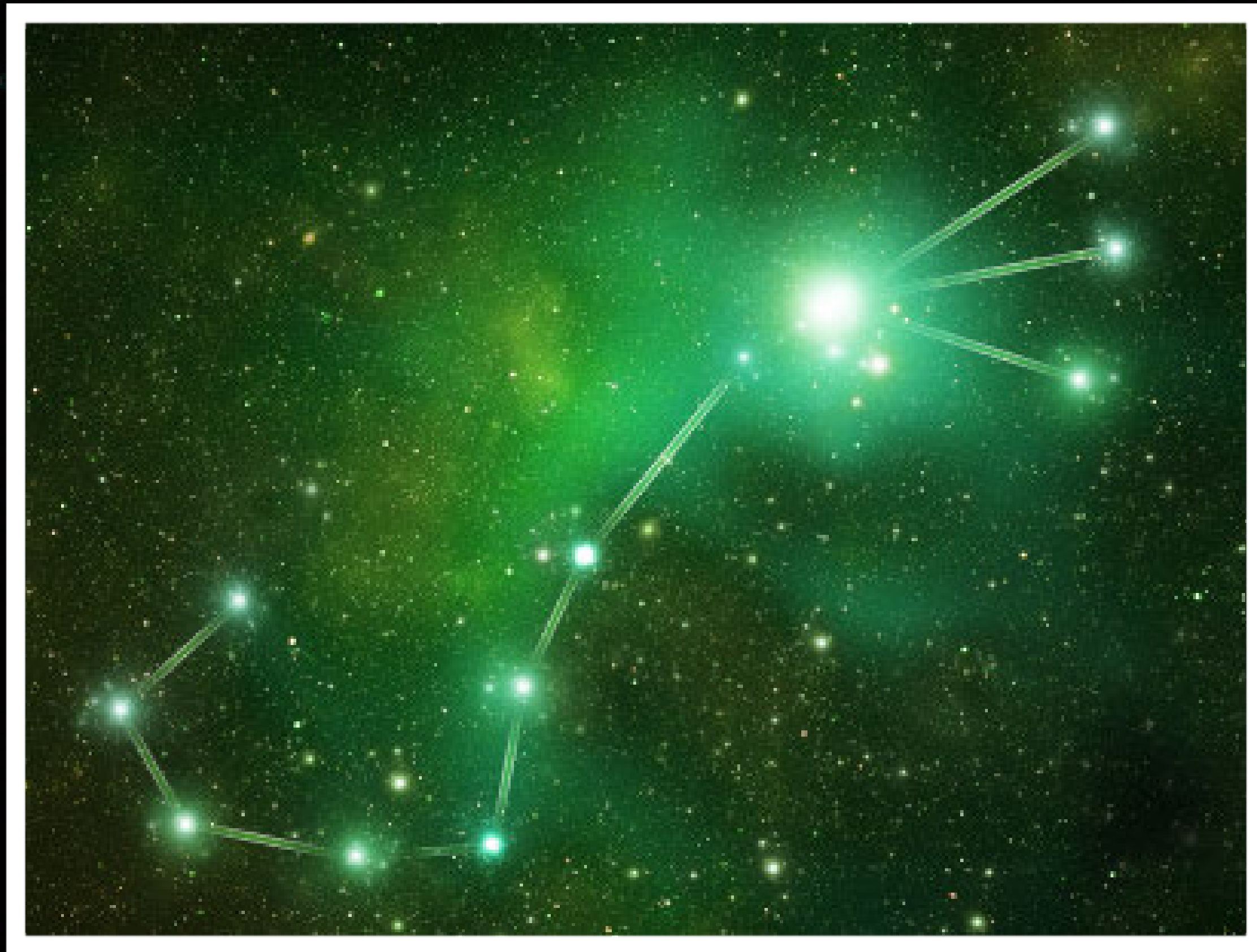


**SAGITTARIUS**

BACK

NEXT

# Scorpius - The Scorpion



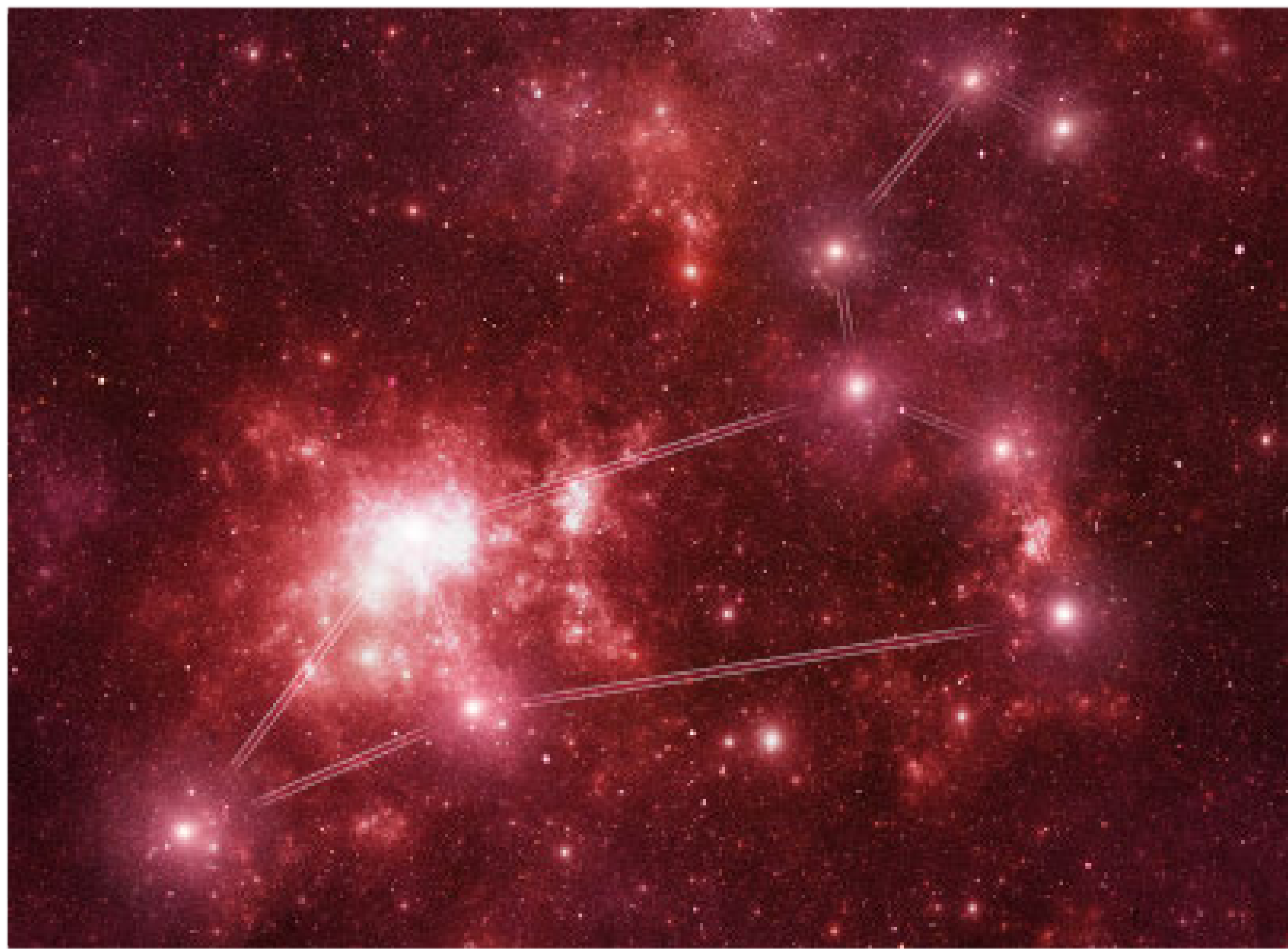
**SCORPIO**

BACK

NEXT



# Leo - The Lion

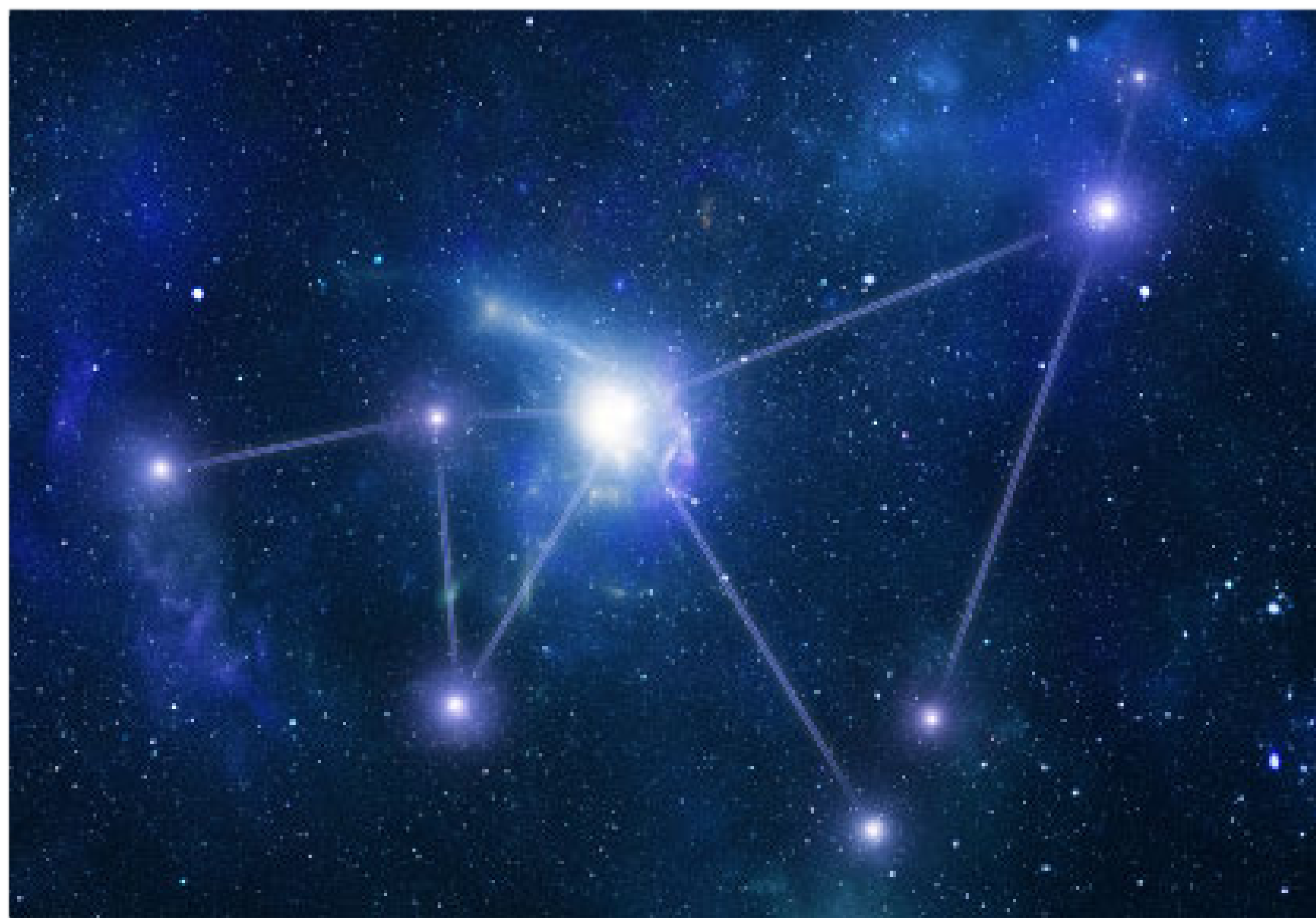


**LEO**

BACK

NEXT

# Capricornus - The Goat



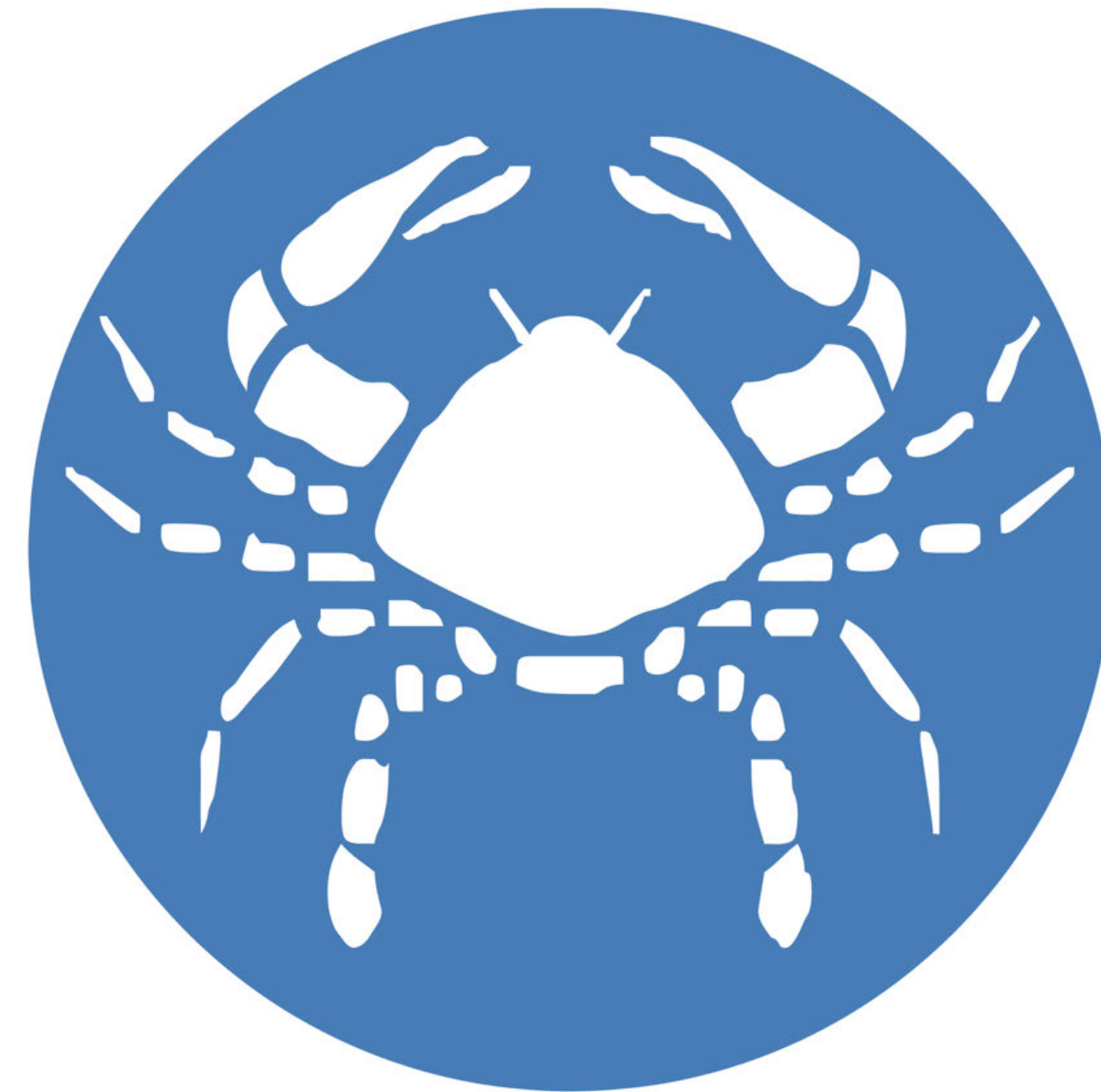
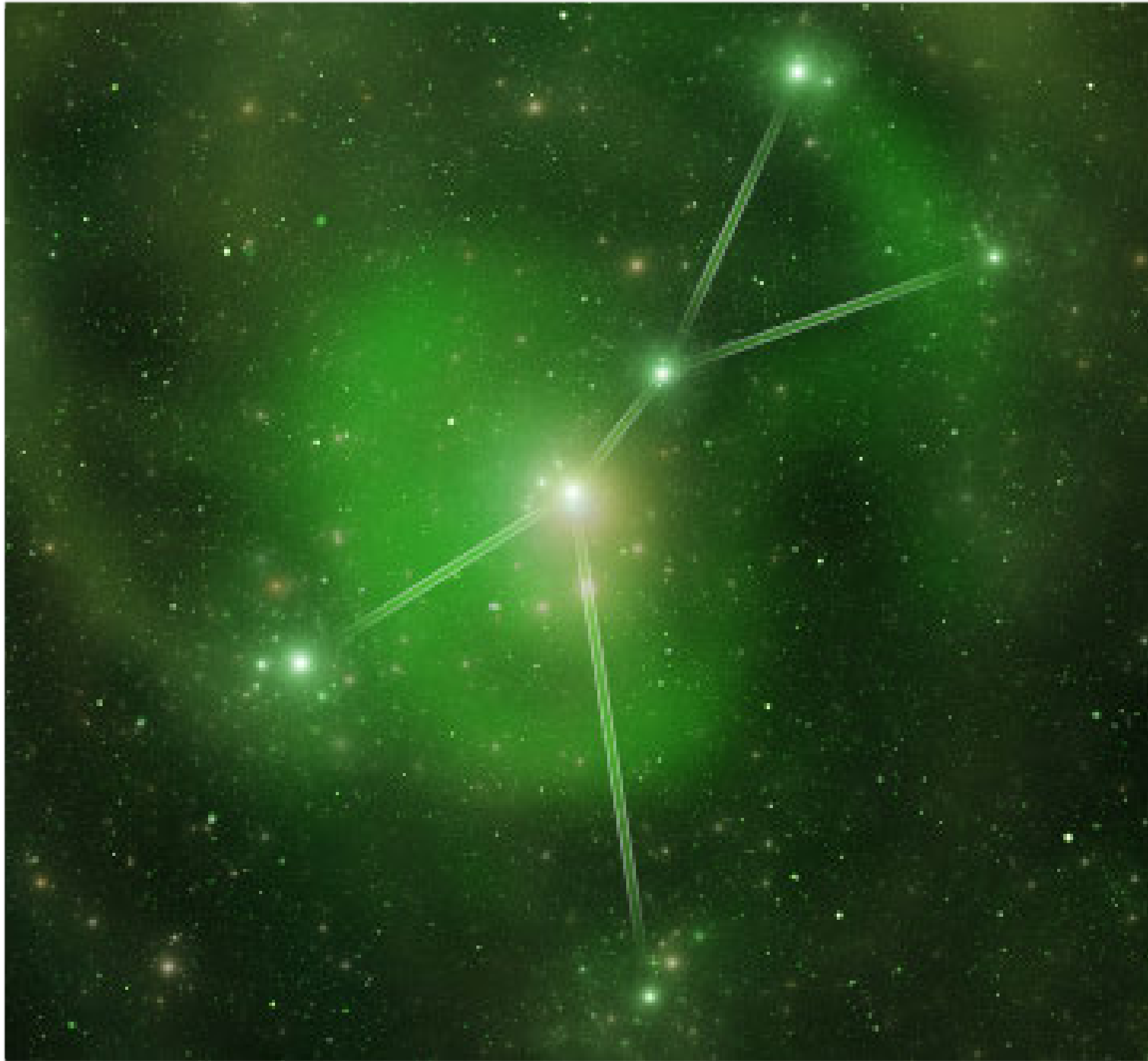
**CAPRICORN**

BACK

NEXT



# Cancer - The Crab



**CANCER**

BACK

NEXT