

Galileo didn't stop with the moon. He turned his telescope toward the Sun and

spied dark blemishes called sunspots traveling across the face of the supposedly pure sun. He used this discovery as part of his support for Copernicus's theory that the planets orbit the Sun.

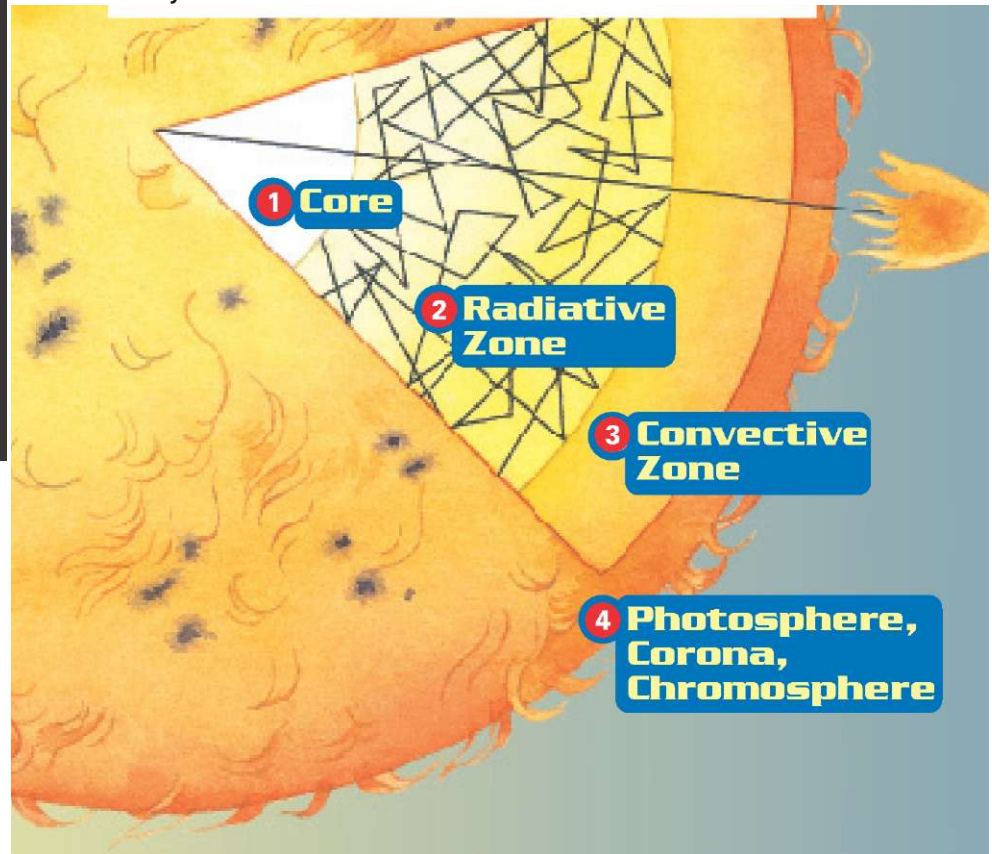
Public outrage was incredible. Nearly everyone accepted the Church's teaching that the Sun, a perfect sphere, orbits Earth. Galileo was put on trial for publishing his "heretical" observations. Under threat of torture, he renounced his ideas and spent the rest of his life under house arrest.

Eventually Galileo went blind, probably from looking directly at the Sun. We've come up with a safer way for you to explore the Sun. Just take our tour below and you'll be a Sun-seasoned traveler in no time.

A Sun-sational Journey

1 THE ULTIMATE SARDINE CAN We start our journey in the very core of the Sun. And you? You're an atom of hydrogen, the smallest and simplest of all atoms in the universe. At this location, half of the Sun's mass is squeezed into a fraction of its volume. That means a tremendous amount of pressure. How does it feel? Imagine that you're a sardine in a can being stomped by an elephant carrying tons of bricks. Okay? Now multiply that feeling by a zillion.

The pressure and heat (15,000,000 °K!) fuse you and another hydrogen atom into an atom of helium. But you're not alone, hundreds of millions of tons of hydrogen are fusing into helium every second.

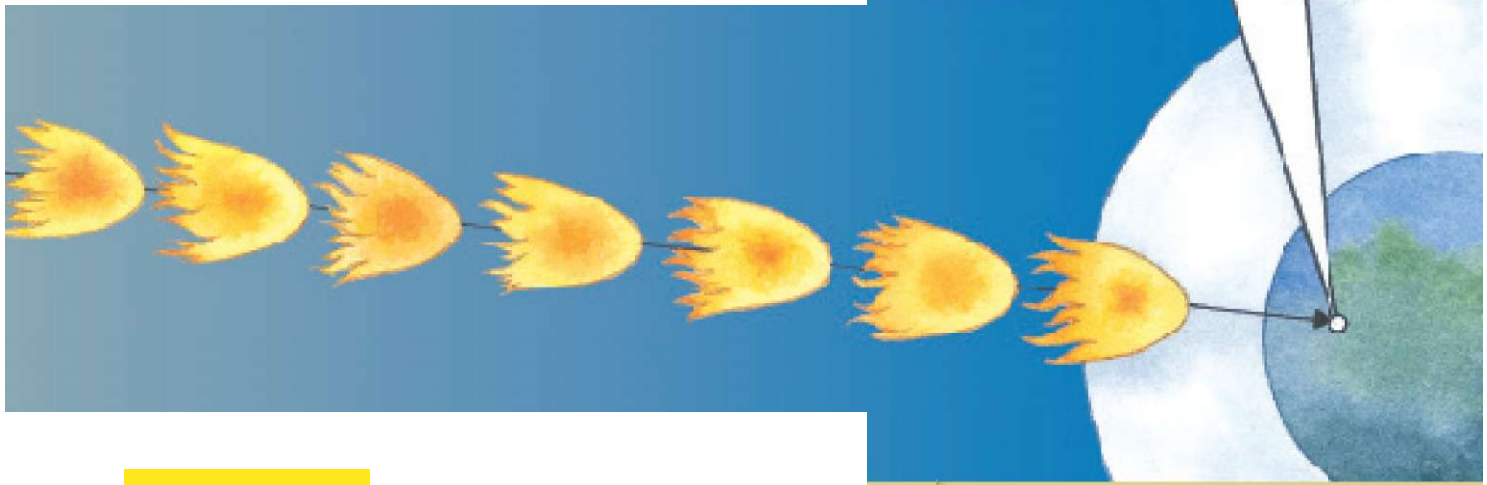
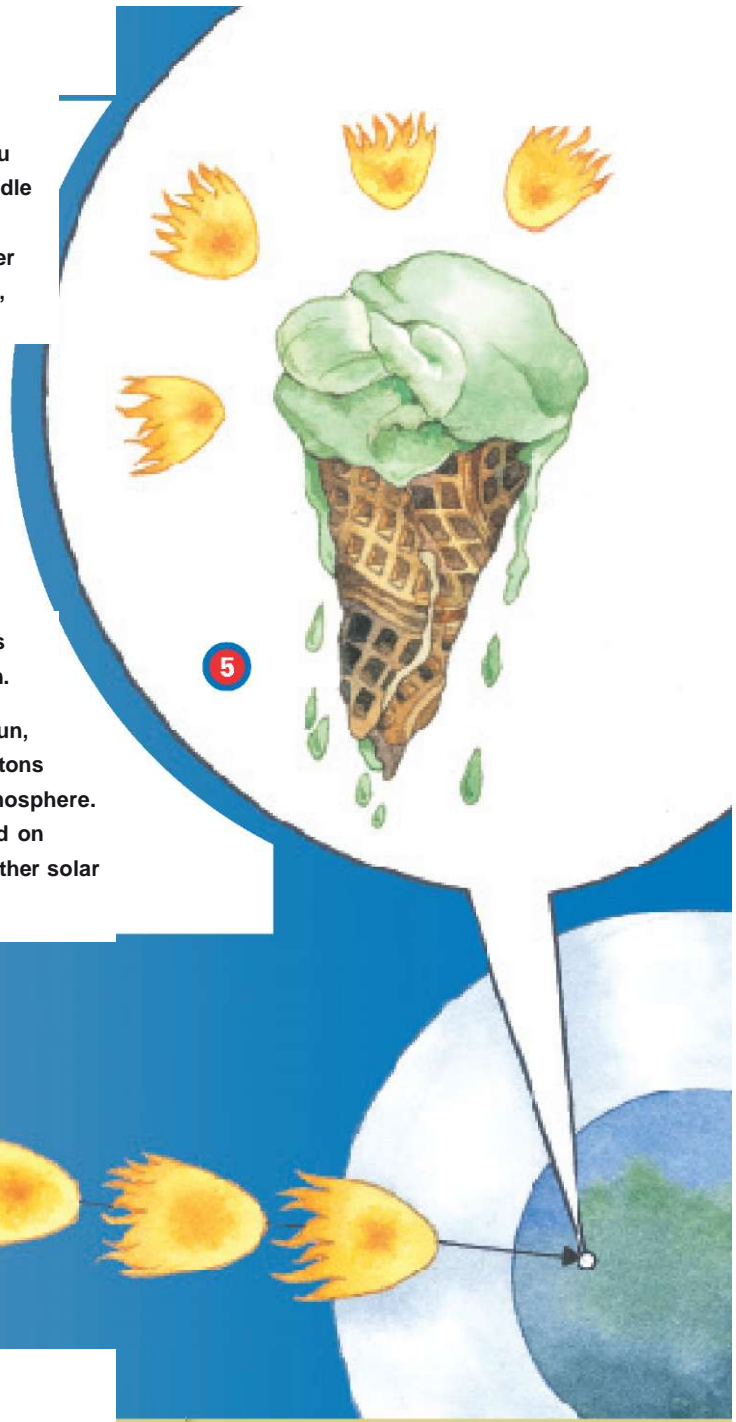


2 PINBALLED OUT The nuclear reaction gives off energy. You leave the helium atom in the form of a photon, a tiny, speedy bundle of solar energy. You radiate out of the core into a zone of dense hydrogen and helium. Here, you're in a pinball machine that never seems to stop. For tens of thousands—maybe millions—of years, you bounce off gases at random, zigzagging every which way.

3 SEEING THE LIGHT The collisions wear down your energy level. While stronger photons keep their high-energy gamma ray form, you weaken into X rays and then low-energy visible light. Finally, you reach a "cooler" part of the Sun—just 2,000,000 °K. There, gases swirl in super-bumpy currents.

4 RIDING THE RAPIDS You whoosh through the turbulent rapids to the surface—just 6,400 °K. From there, it's a swift trip through the Sun's atmosphere and into space. You and countless other energy particles travel in all directions away from the Sun.

5 A SOFT LANDING About eight minutes after leaving the Sun, you enter the atmosphere of a tiny blue planet. High-energy photons such as gamma rays and ultraviolet light are blocked by the atmosphere. But you've cooled off. You can zip easily through the air and land on something soft. You are absorbed in the softness, as are many other solar photons. The cool thing starts to ... melt.



Activity

CATCH SOME RAYS

Here's a cool way to grab some sun!

What you need:

- A sunny day
- A friend to help
- A piece of thin cardboard
- A piece of white paper
- A pen

What you do:

1. Using the tip of the pen, punch a hole in the thin cardboard.
2. Ask your friend to hold the cardboard in direct sunlight.
3. Hold the paper in the cardboard's shadow.
4. Look for a small, white circle. This is the upside-down image of the Sun!
5. Move the cardboard forward or back to focus the image.

When a cloud passes in front of the Sun, its shadow will cross the image in the opposite direction. (Never look directly at the Sun.)