

Projecting the Sun

MATERIALS

2 sheets of heavy paper
Aluminum Foil
Tape
A pin
A Sunny Day

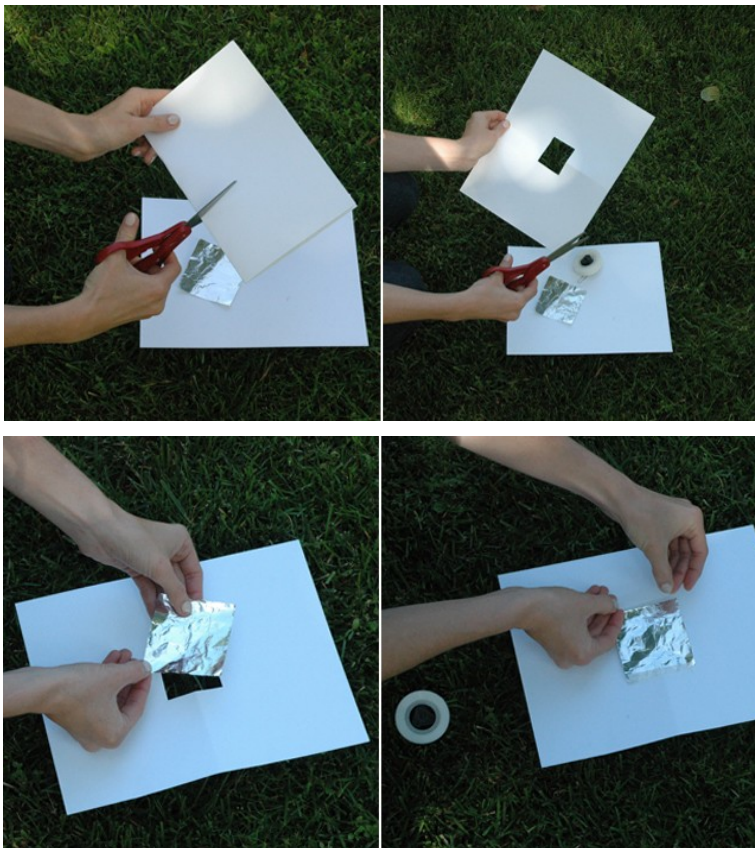


It is dangerous to look at the Sun directly!

However, there are ways that we can look at the details of the sun without the side effects of burning your retinas! We can use an old method called projection to see the sun spots and other details from the sun! We will make a pinhole camera to project the sun's image onto a piece of paper.

You can check out what the sun will look like today by visiting this website:

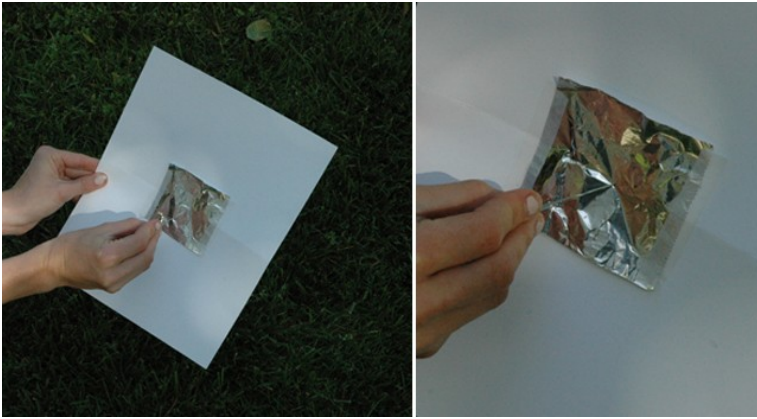
Spaceweather.com



MAKE A PINHOLE CAMERA:

Cut a square out of the middle of the paper.

Tape a square of aluminum foil over the cut out square on the piece of paper.



Use your pin to poke a hole through the middle of the aluminum foil square.

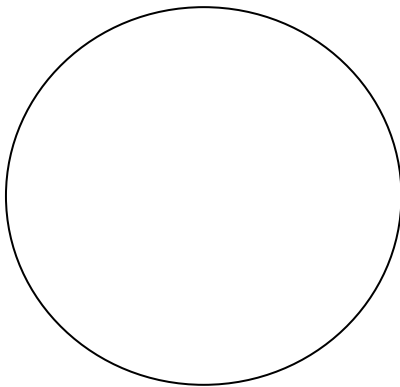
Above images Courtesy NASA/JPL-Caltech



Use your pinhole camera to project an image of the sun onto the other piece of paper. Simply hold the paper with the hole over your paper with the hole and find where the light that passes through looks best.

This is not just a dot of light, it is the image of the sun!

Courtesy of the Nasa Jet Propulsion Laboratory



Sketch what you see on the circle to the left.

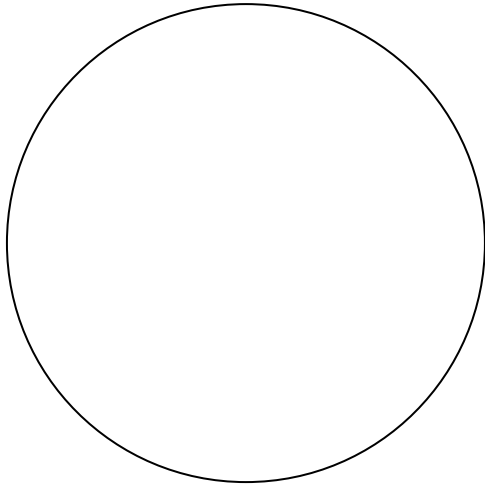
The spots you see on the image represent sunspots or different objects blocking the light of the sun.

The image shows a variation of the pinhole camera using a pair of binoculars. In the bottom right corner of the sun's image you can see a dot blocking the light. That is actually the planet Venus

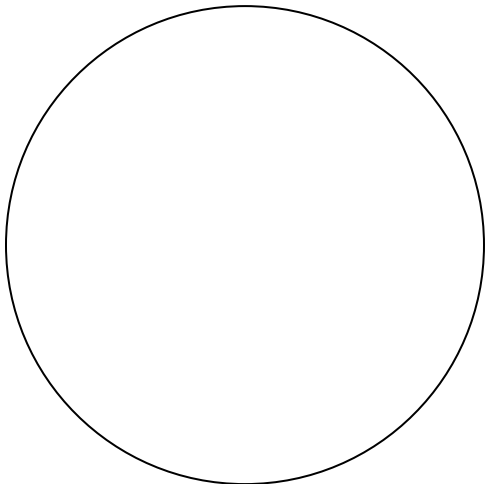


CC BY-NC 2.0 photographer— g-s-h

Repeat the procedure using a larger and smaller hole. How is the projected image different? Sketch what you see.



Larger Hole?

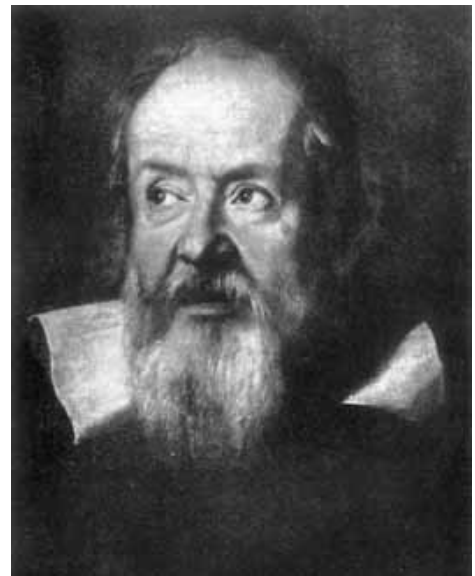


Smaller Hole?

Galileo used pinhole cameras and projections of the sun to identify and challenge commonly held beliefs about the nature of the solar system. Galileo discovered sunspots, and confirmed the sun rotates by watching the sunspots move. He also confirmed that the solar system is heliocentric, which means that the planets rotate around the sun. This is contrary to the popularly held belief at the time that the planets and the sun rotate around the earth.

You can learn more by visiting this website:

<http://solar-center.stanford.edu/galileo/>



CC BY 2.0 - tonymetone