



Why do Stars Twinkle?

A M.A.R.S. Resource Document

Object: Perform an experiment to learn why stars twinkle.

Age: 7 years and older

Materials you will need:

- a flashlight
- a 2 qt. glass bowl
- a piece of aluminum foil large enough to fit under the bowl
- a pencil

Preparation:

1. Wrinkle the aluminum foil with your hands.
2. Place the bowl on top of the foil and fill it half-full with water.

Experiment:

1. Turn off the lights and hold the flashlight, pointed downward, about one foot above of the bowl.
2. What is happening? How does the light appear when the water is still?
3. Using the pencil, gently tap the surface of the water.
4. What is happening? How does the foil look?

Results: The moving water causes the reflecting light to blur.

Why? Light travels in a straight line. When light hits the waves on the water's surface, the light rays move in different directions. This is called *refraction*, the change in the direction of light rays. Light sources, such as stars, act in the same manner when the light passes through moving material. A star will appear to twinkle when viewed from the Earth's surface. The light is bent this way and that as it moves through whirling pockets of air in the Earth's atmosphere. The scientific term for twinkling is *scintillation*. Stars do not scintillate when viewed from a spacecraft above Earth's atmosphere. There is not enough material in space to refract the star's light.

Reference: *Astronomy for Every Kid* by Janice VanCleave

For more astronomy activities, check out www.marsastro.org, the website of the Museum Astronomical Resource Society (MARS Astronomy Club), Tampa, Florida.