CAN AIR ENTER THROUGH A LEAF?

A. Question: *Can air be extracted from a leaf?*

B. Materials Needed:

- A leaf with a long stem
- A small Erlenmeyer flask
- A 2-hole stopper that fits in the flask
- A bent glass tube
- A candle and matches

C: Procedure:

1. Stick the leaf stem through one of the holes in the 2-hole stopper and seal it with dripping wax from a lit candle. An adult should assist with the step.
2. Insert the bent glass tube in the other hole of the stopper.
3. Fill the Erlenmeyer flask with water to such a level that only the leaf stem immerse in it. The glass tube should NOT be immersed.
4. Place the stopper tightly into the flask and suck air through the bent glass tube.
5. Observe air bubbles issuing from the end of the stalk.

D: Anticipated Results:

Air bubbles will be observed leaving the end of the leaf's stalk.

E: Thought Questions for Class Discussion:

1. Why does the stem have to be sealed in the stopper?
2. What would happen if the glass tube were also immersed in the water?
3. Are the leaf and the stem actually that porous that air can go through them?
4. What is the actual structure of leaves?

F: Explanation:

By sucking in air through the bent glass tube, you caused the pressure inside the flask to decrease. This caused the atmospheric air to seep through the leaf and stalk, resulting in the bubbles issued from the end of the stalk. When looking through a microscope to examine the underside of a leaf, it is possible to see the breathing pores called stomata. On each side of the stomata are two guard cells.