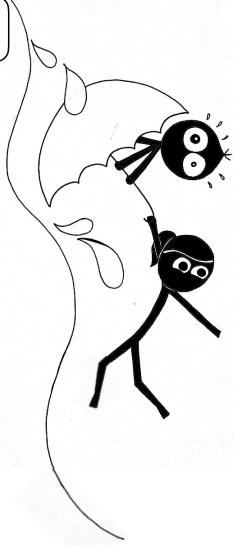
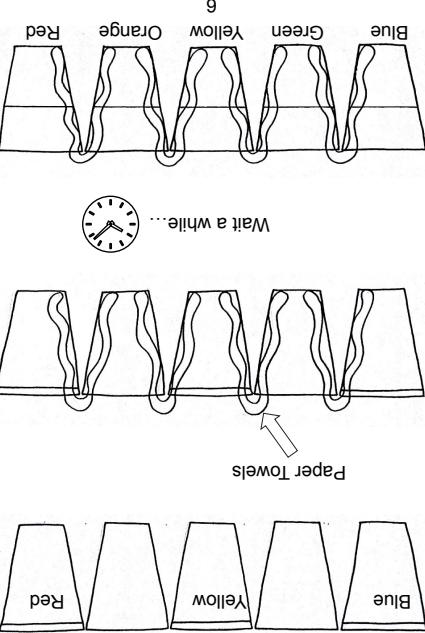


# SCIENCE MOM'S

## Guide to WATER, Part 3



YouTube Channel: Science Mom  
Email: jenballif@gmail.com



- Materials:**
- Water
  - Food coloring
  - 4 paper towels
  - 5 cups
- Method:**
- Fill 3 cups with water and leave 2 cups empty. Arrange them in a line.
  - Place the paper towels in the water. The water will rise up the towels.
  - Wait a while...
  - Turn the towels over.

### 2. Walking Water

Did you know that plants release water through tiny holes in their leaves?

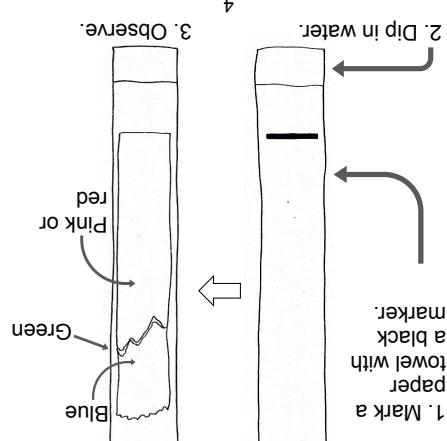
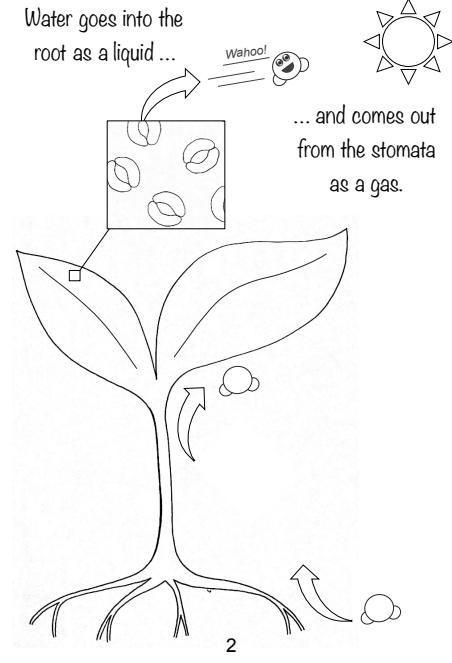
Water enters the plant at the roots and is drawn up through tiny tubes called **xylem**.

When it gets to the leaves, water evaporates out through small holes or pores called **stomata**, which can be opened or closed.

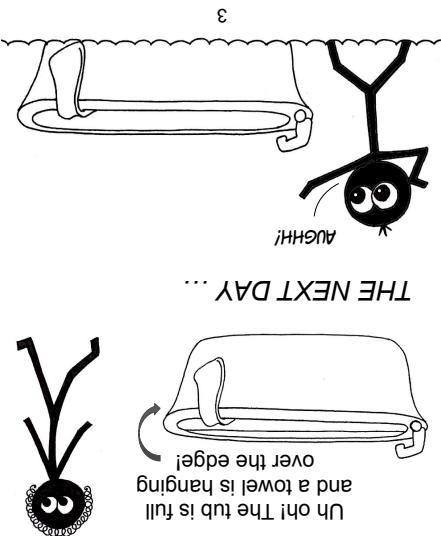
#### COOL FACT:

Plants can only get the air they need ( $\text{CO}_2$ ), if their stomata are open. Since their stomata can only be open if they have enough water, that means plants can only breathe when they have water. A wilting plant is, essentially, trying to stay alive by holding its breath.

1

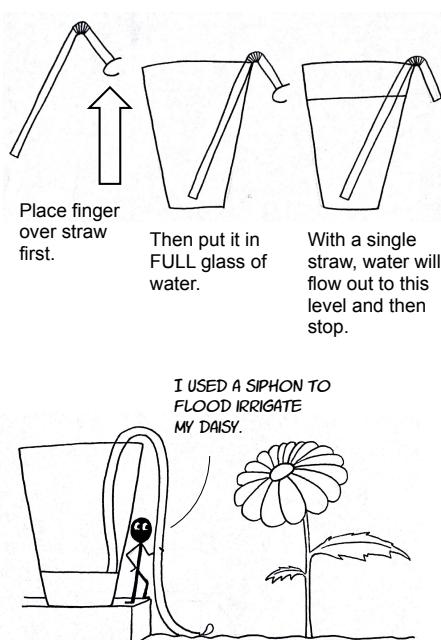


- 1. Chromatography**
- Find out with paper towel chromatography!
- Is black ink really black?



Uh oh! The tub is full and a towel is hanging over the edge!

Plants aren't the only things that can move water. Cloth can alsowick water from one location to another.



### 3. Straw siphon

#### Materials:

- Bendable drinking straws
- Cup
- Water
- Tape or plastic tubing (optional)

#### Method:

- Fill cup to brim with water.
- Put finger over top of straw to seal in the air.
- Submerge the straw into the cup so that the bend of the straw rests on the rim of the cup.
- Release thumb from straw and watch the water flow.

*Tip: To make a siphon that can empty the whole cup, use tubing or carefully join two straws together with tape.*

7

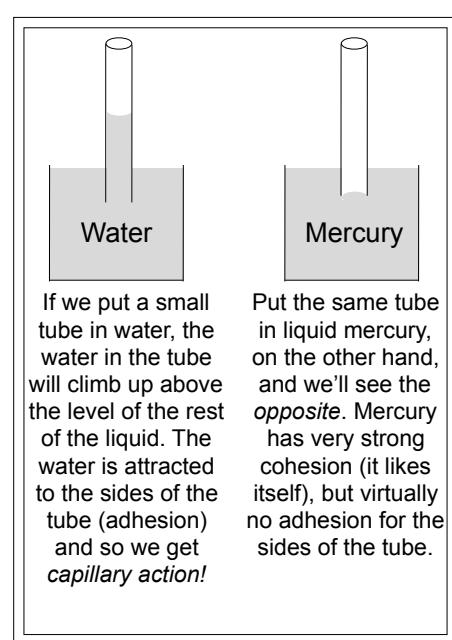
### HOW DOES IT WORK? Capillary Action.

Another cool property of water.

Because water likes to stick to itself and other surfaces, it can flow through small spaces all on its own without the help of pumps or gravity.

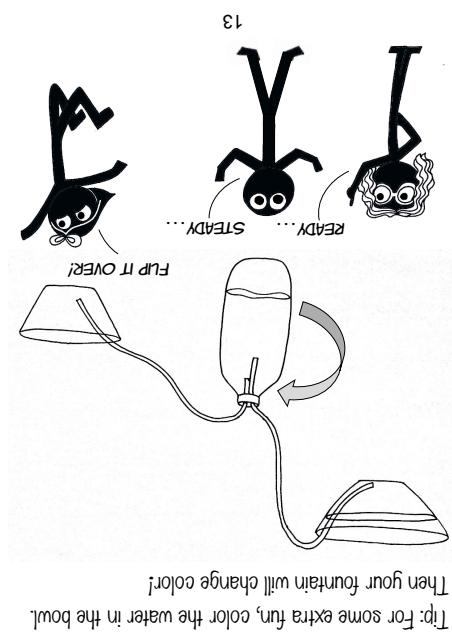
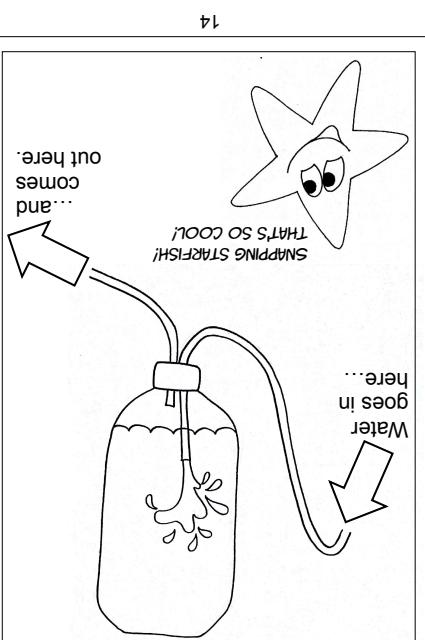
Siphons work because of physics. The water is still flowing downhill, even if it goes up over a bump to get there. But with the help of capillary action, water really can flow UPHILL.

Capillary action exists because of adhesion: water being attracted to other surfaces. It plays an important role in both biology (ever heard of capillaries?) and geology (frost wedging and weathering!).



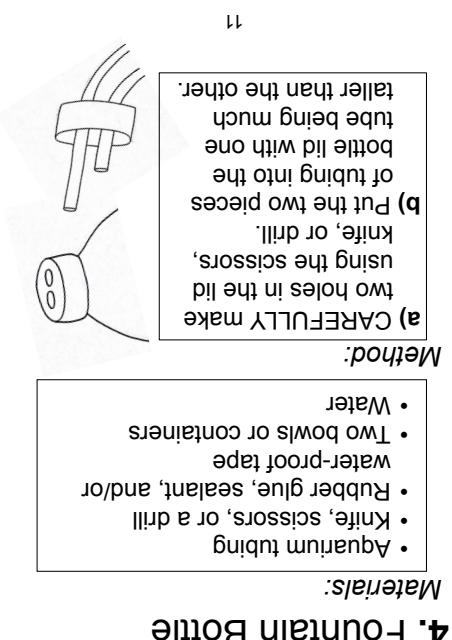
9

10



- Materials:**
- Water
  - Rubber glue, sealant, and/or waterproof tape
  - Knives, scissors, or a drill
  - Aquafilm tubing
- Method:**
- CAREFULLY make two holes in the lid using the scisscors, knife, or drill.
  - Put the two pieces of tubing into the lid.
  - Fill the bottle upside down and where the bottle that is higher than the pot of water has been put the other end.
  - Place the taller tubing in a bowl to cover the shorter tube and screw on the lid.
  - Fill the fountain won't work, then the fountain will change color!
  - Use glue and/or tape to seal around the tubing. If there's a leak in the lid, air tight. If the fountain won't work, then the fountain will change color!
  - Flip the bottle upside down and where the bottle that is higher than the pot of water has been put the other end.

11



### 4. Fountain Bottle

B

A

A

X

B

C

C

D

F

E

E

D

E

G

G

X