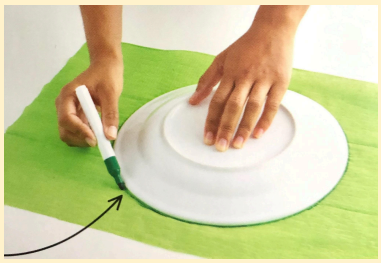
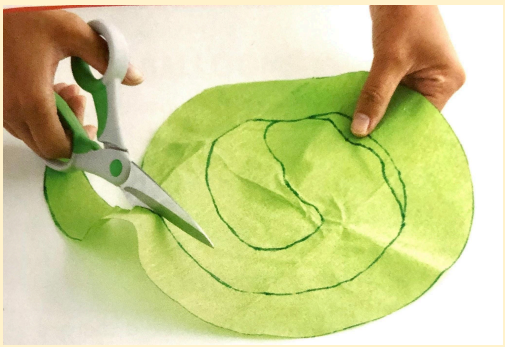
DANCING SNAKE

Source: Smithsonian Maker Lab: 28 Super Cool Projects by Jack Challoner (2016)

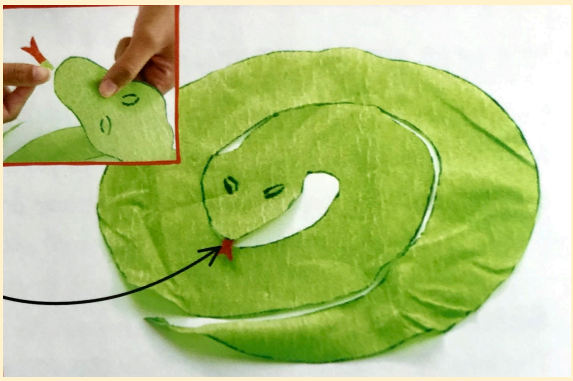
How would you like to have a new career as a snake charmer and get a writhing serpent to jump up and down and dance as if by magic? You'll have to make use of an invisible force called **static electricity.** You can create this force with just tissue paper and a balloon. As you'll see, **static electricity**, a very safe type of electricity, can do other strange things besides training paper snakes. It can even bend a stream of water!

You need a steady (firm; not shaking or moving) hand to draw and cut out your snake,but otherwise, this experiment is as easy as blowing up a balloon! Once you've discovered what **static electricity** can do to a tissue snake, you can try other things,too. The tiny electric charge involved in the experiment is completely safe. However, you should never investigate the electricity in power cables and appliances, as it can be very dangerous!

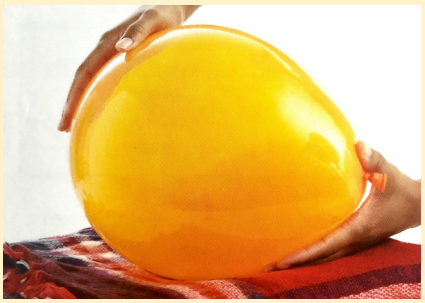
WHAT YOU NEED	
• Balloon • Masking tape • Balloon • Pens • Scissors	• Large plate or bowl • Tissue paper • Basket (Optional. For a real snake charmer effect, put the snake inside!)
DIRECTIONS	
1. Unfold the tissue paper so that it is just one sheet thick. For best results, use the thinnest tissue paper you can find. Lay the paper out flat on a table and put the plates upside down on top. Draw around the plate with a pen.	
2. Now draw a spiral on the paper, to create an outline of a coiled-up snake. The center of the spiral will be the head of the snake, while the foil will be the pointed part around the outside.	
3. Cut carefully around the circle you drew and continue along the line of the spiral. As you go around, your snake will be revealed! Tissue paper crumples up very easily, so try not to grip it too hard with your fingers.	

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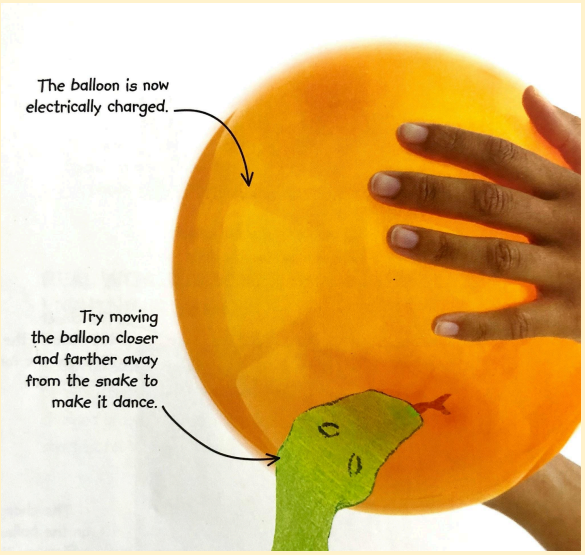
4. You can decorate the snake if you like. Perhaps you could draw on some eyes or make a small tongue by coloring in some leftover tissue paper with a red pen, then sticking it on. Tape the snake's tail to the table.



5. Now it's time to generate static electricity. Blow up the balloon and tie it off. Then rub it quite hard against something wool, such as a blanket, for about a minute. If you don't have anything made of wool, you can rub the balloon on your hair.



6. Hold the charged balloon a few inches above the snake and then slowly bring it closer. When the balloon is about ¾ inch (2 cm) above the snake's head, the snake will be attracted to the balloon, and will rise up toward it.



TAKE IT FURTHER

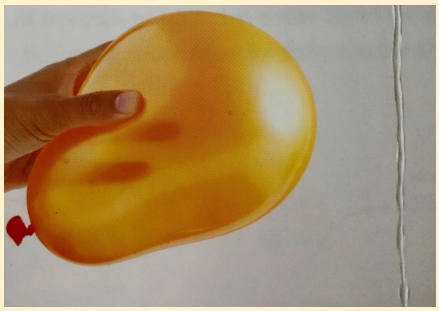
You can explore the forces of static electricity in many ways. Here are just a few fun ways, using objects you can find around the home. Charge the balloons by rubbing on hair or wool, as before.

BENDING WATER

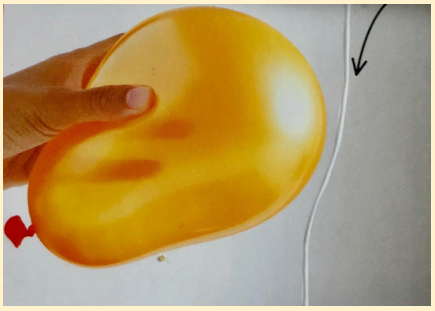
The invisible forces of static electricity can do surprising things that seem like magic! See for yourself how static electricity can bend water before your very eyes!

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1. Turn on a faucet to produce a slow but steady stream of water. Bring an uncharged balloon close to the running water. What happens? Nothing!



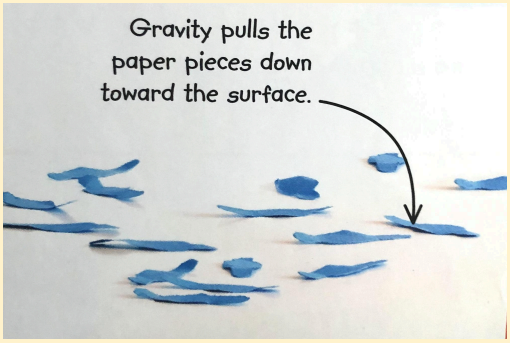
2. Now charge up the balloon and bring it close to the stream of water. This time the water bends, attracted by the forces of static electricity. *The closer the balloon, the stronger the force of attraction.*



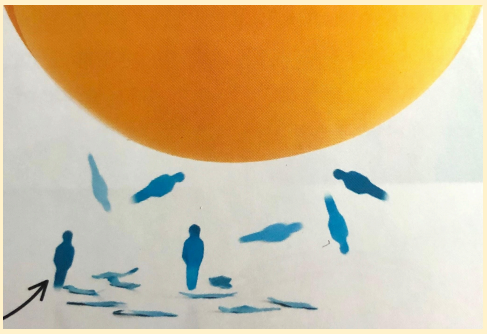
JUMPING PAPER PEOPLE

Make the people dance! You can use a charged balloon to attract small pieces of paper on a table. These can be cut out in the shape of people if you want it to look more realistic.

1. Cut out lots of small pieces of paper. The round "confetti" made by a hole punch works well,or you could make fun shapes. Lay them on a table.



2. Bring a charged balloon close to the paper pieces. The pieces will jump and stick to the balloon. Some will even fall off and jump up again.

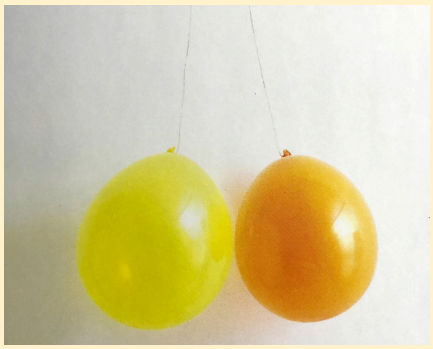


PUSHING BALLOONS

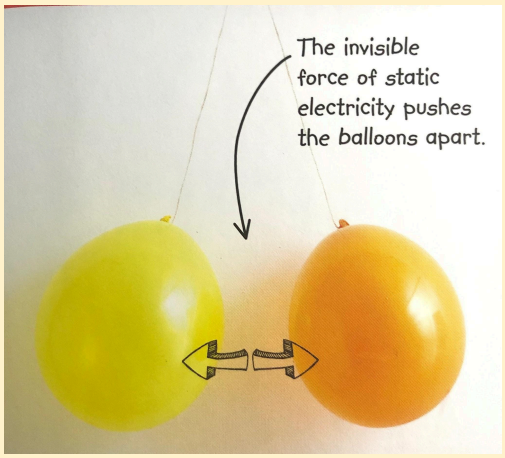
Hang two uncharged balloons together and nothing much happens. Yet,when the balloons are charged with static electricity, things start to get a little more interesting.

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1. Tie string to each of two balloons. Do not charge them yet, but hold both strings between a finger and thumb and let the balloons hang down.

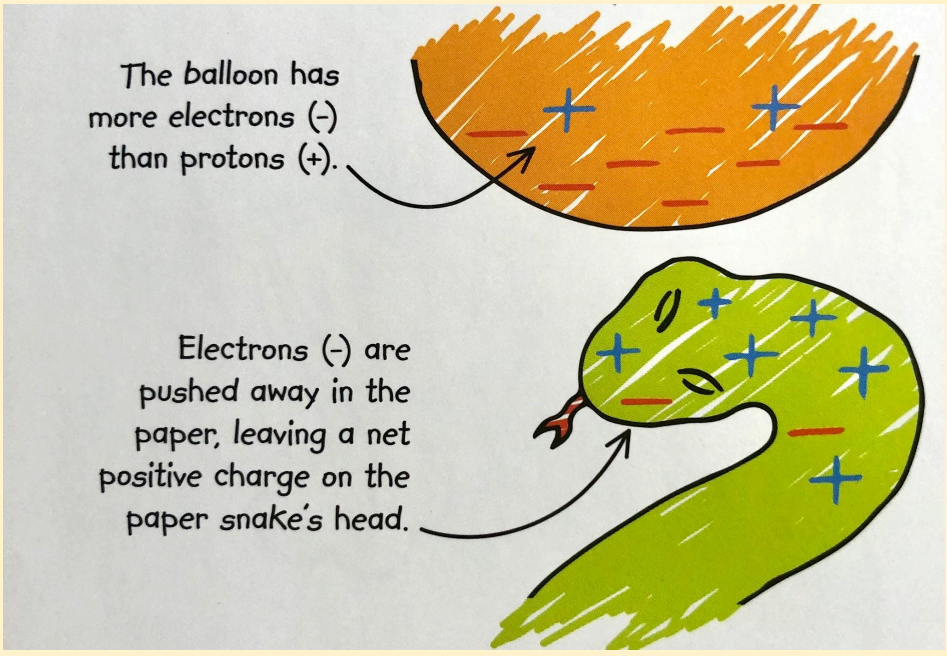


2. Charge both balloons evenly, all over their surfaces. When you dangle them down now, they stay apart, repelled(pushed) by an invisible force.



HOW IT WORKS

Electric charge is carried by tiny particles called **protons**, which carry a positive (+) charge, and electrons, which carry a negative (-) charge. Charges exert forces on each other. Charges of the same type push apart, or **repel**, while opposite charges pull together, or **attract**. Normally, there are equal numbers of positive and negative charges everywhere. However, when you rub the balloon on wool or your hair, it picks up extra electrons, giving the balloons an overall negative charge. This pushes the **electrons** away in the paper,making the paper's edge positively charged. That is why the paper snake is attracted to the balloon.

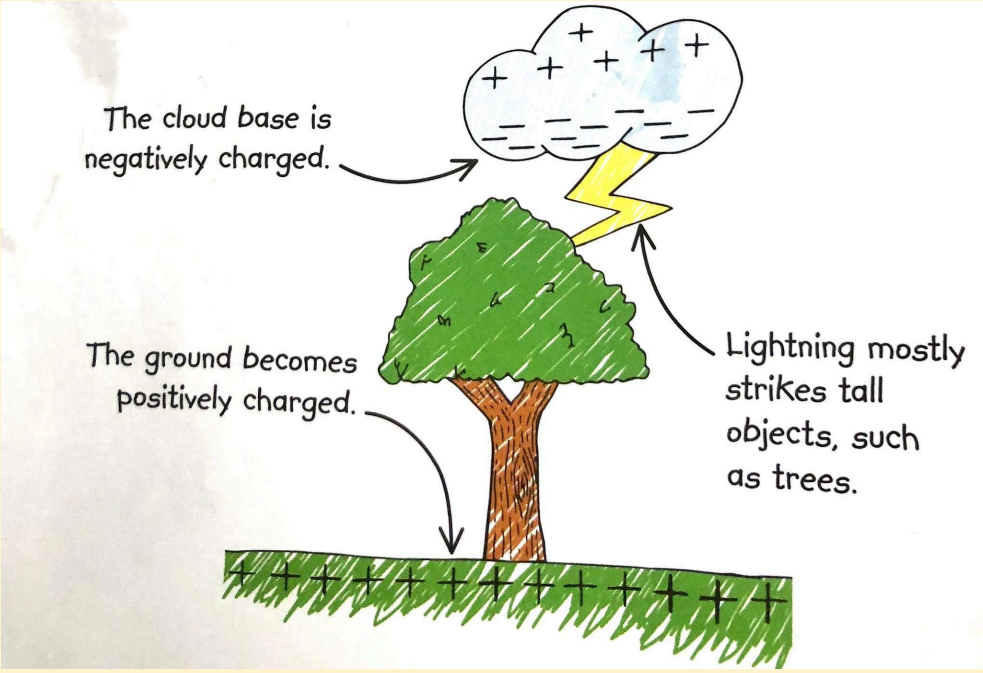


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REAL WORLD SCIENCE

LIGHTNING STORM

Inside a thundercloud, swirling winds make ice crystals in the cloud rub together, which charges them. The base of the cloud becomes negatively charged, which is attracted to a positively charged ground. This can produce lightning, which takes the shortest route to the ground, often striking trees. *DANGER! It can also strike people and may be deadly!*



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