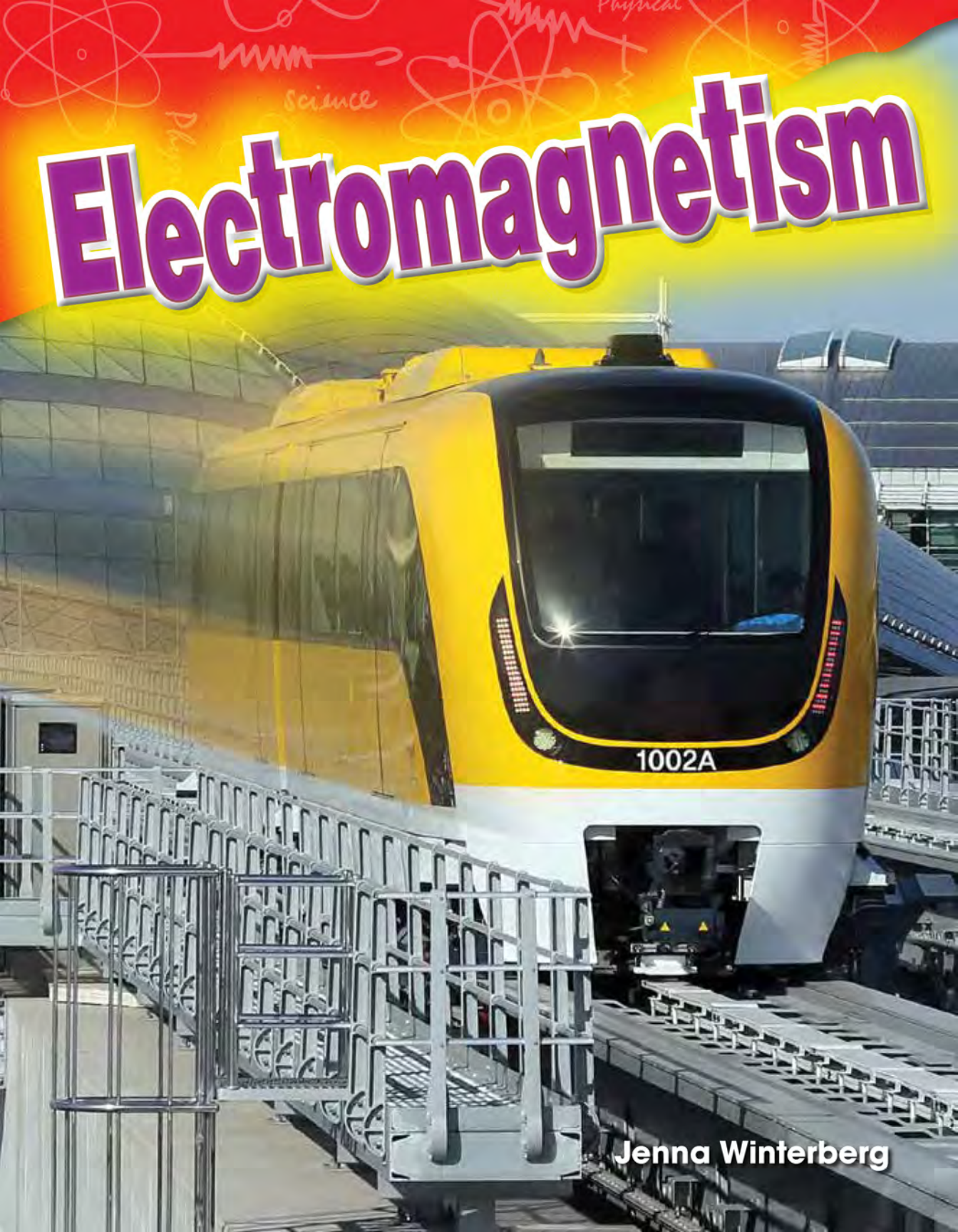
Electromagnetism



Jenna Winterberg

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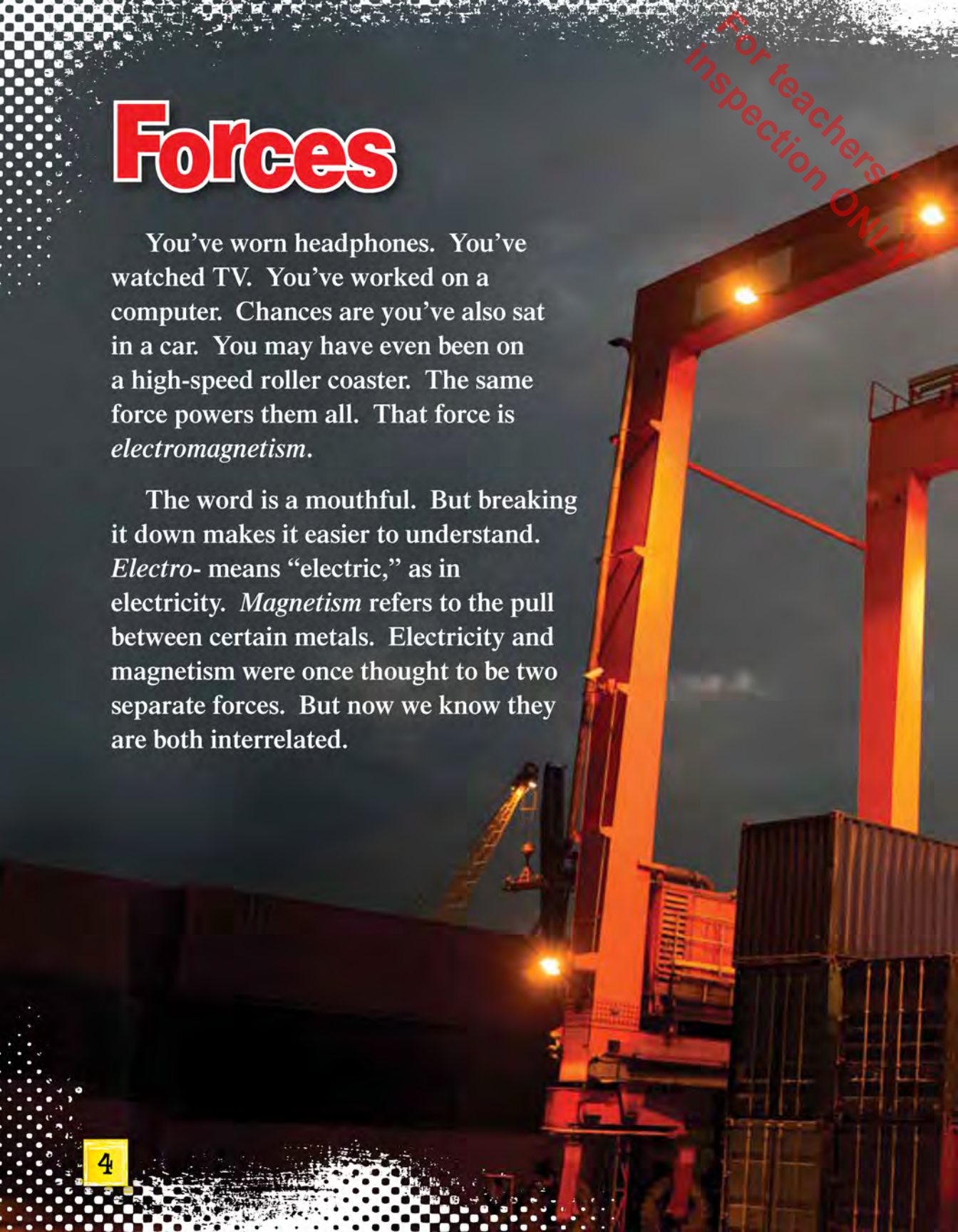
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Forces



You've worn headphones. You've watched TV. You've worked on a computer. Chances are you've also sat in a car. You may have even been on a high-speed roller coaster. The same force powers them all. That force is *electromagnetism*.

The word is a mouthful. But breaking it down makes it easier to understand. *Electro-* means "electric," as in electricity. *Magnetism* refers to the pull between certain metals. Electricity and magnetism were once thought to be two separate forces. But now we know they are both interrelated.

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Electromagnetism at Work

Electromagnetic cranes can be used to lift and move shipping containers onto trucks and ships. The electromagnet is turned on to lift the container. It is turned off to put the container in the required place.

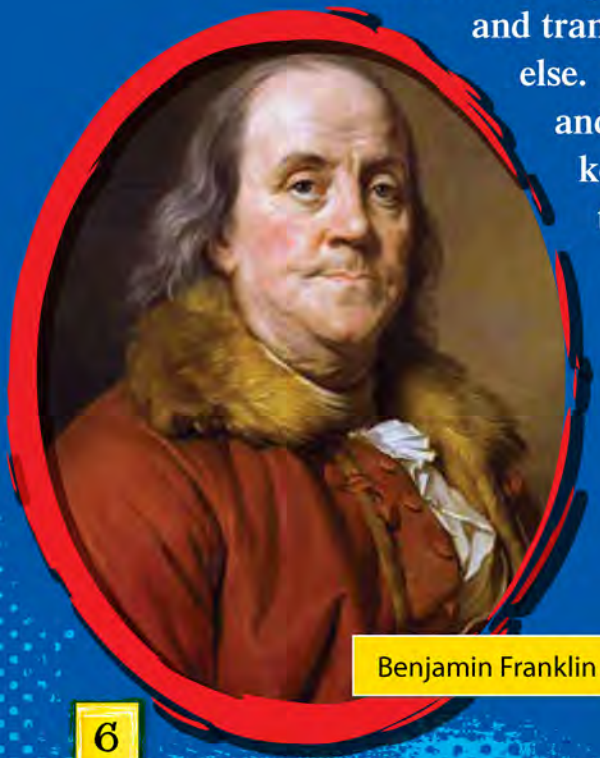
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Electricity

Many people think Benjamin Franklin discovered electricity, but by the 1700s, the discovery was thousands of years old.

Ancient Greeks knew electricity was a type of energy. They also knew its energy could transfer from item to item. They learned this by rubbing pieces of fur on amber. They found the fur was drawn to the stone. This is now called **static electricity**, but it didn't have a name back then.

So what did Franklin study? Lightning. He thought lightning was a type of static electricity. To test this, he needed to capture the energy in the air and transfer the charge to something else. So he tied a key to a kite and used a wire to connect the key to a jar that would store the energy. The kite was carried up to the clouds.



Benjamin Franklin

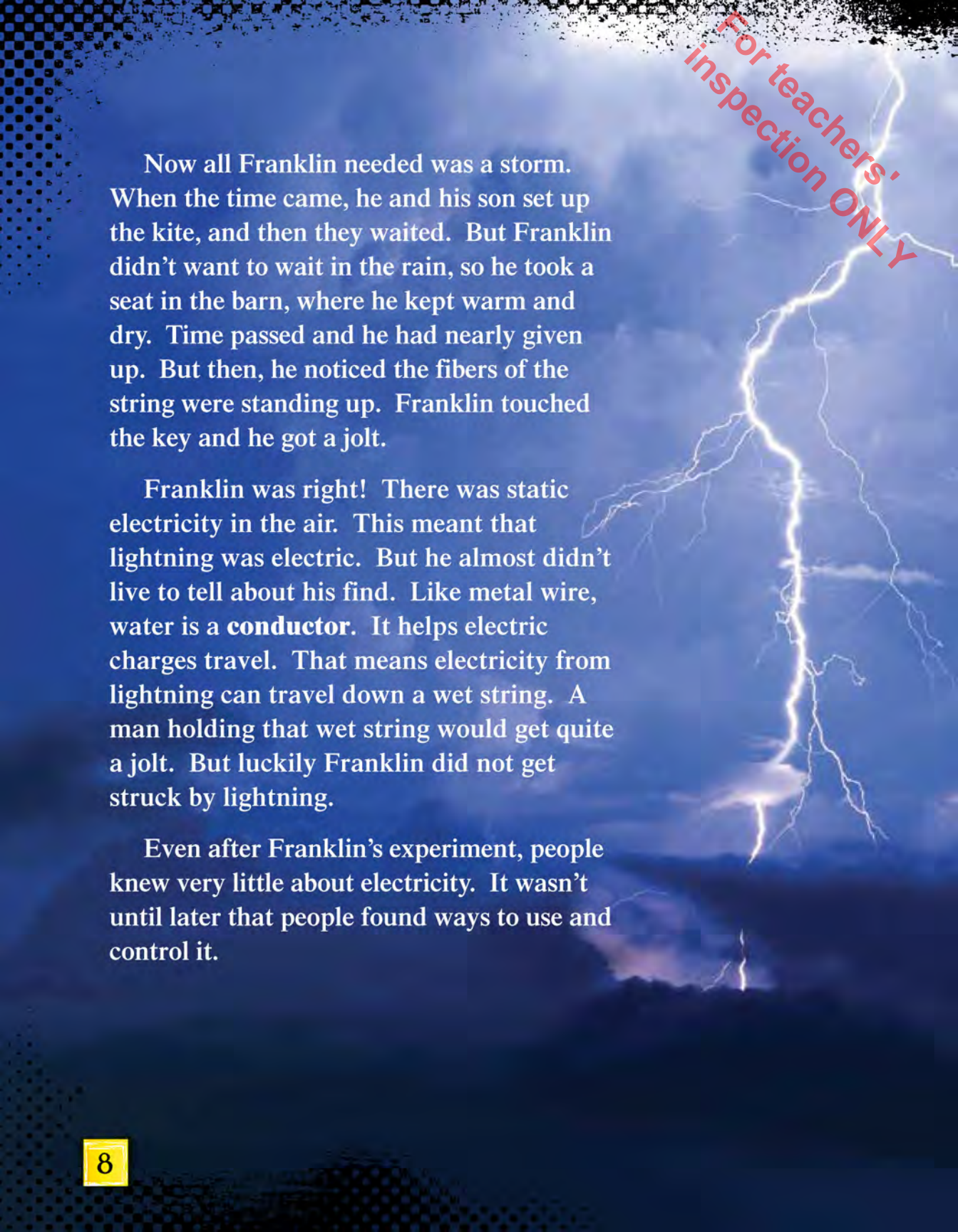
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Static at Play

You can create static electricity. Blow up a balloon, rub it against your shirt, and hold it up to a wall. What happens when you let go?

January 9 is National Static Electricity Day in the United States!



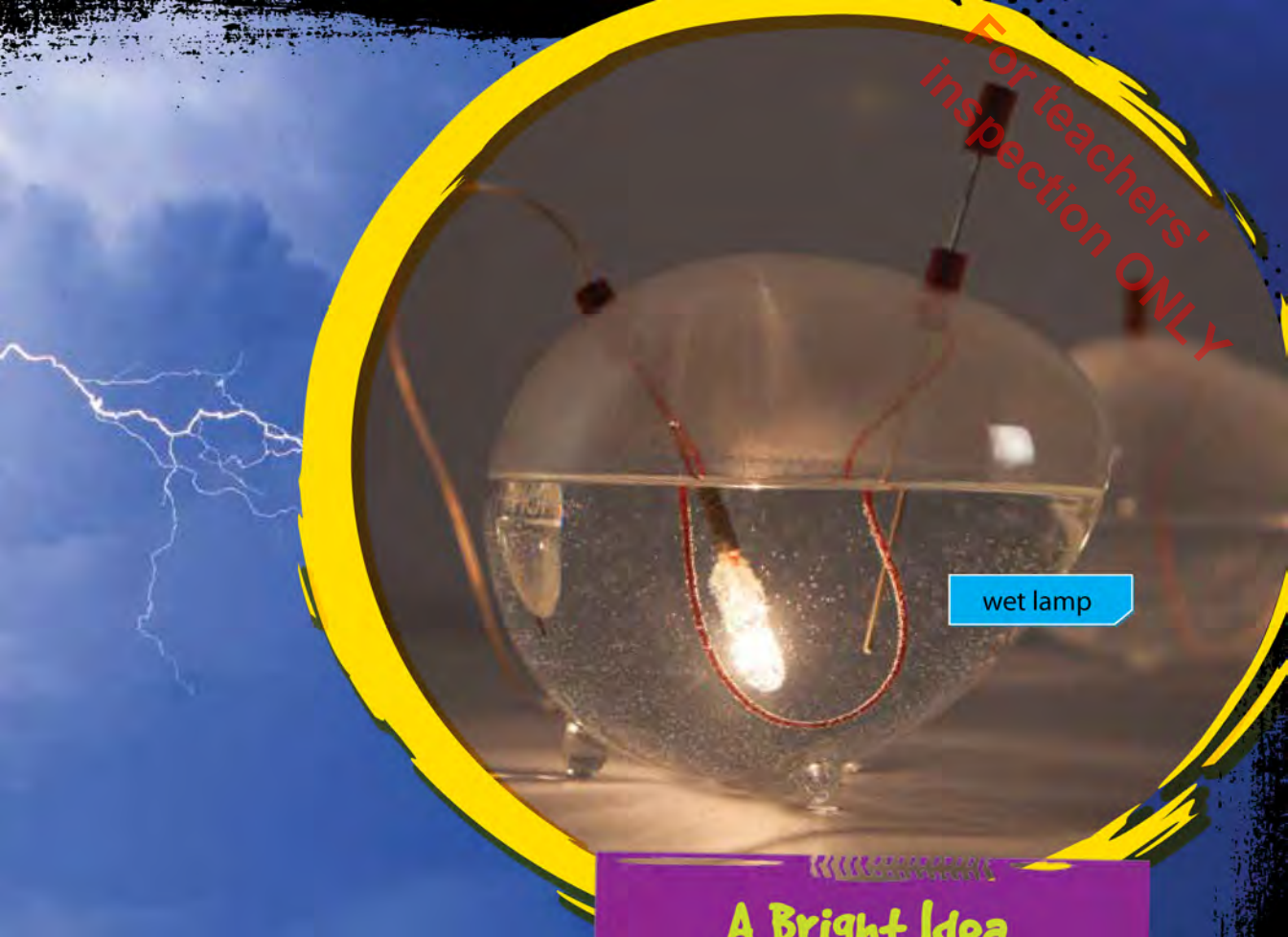
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Now all Franklin needed was a storm. When the time came, he and his son set up the kite, and then they waited. But Franklin didn't want to wait in the rain, so he took a seat in the barn, where he kept warm and dry. Time passed and he had nearly given up. But then, he noticed the fibers of the string were standing up. Franklin touched the key and he got a jolt.

Franklin was right! There was static electricity in the air. This meant that lightning was electric. But he almost didn't live to tell about his find. Like metal wire, water is a **conductor**. It helps electric charges travel. That means electricity from lightning can travel down a wet string. A man holding that wet string would get quite a jolt. But luckily Franklin did not get struck by lightning.

Even after Franklin's experiment, people knew very little about electricity. It wasn't until later that people found ways to use and control it.

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wet lamp

A Bright Idea

The wet lamp uses water's conductivity to create electricity. It turns on and becomes brighter as a thin metal rod slides into the water. To turn the lamp off, the rod is pulled out of the water.

Electricity can be dangerous. Always find an adult to help you with any electrical work you do!

Think Like a Scientist



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What does it take to build a magnet? Experiment and find out!

What to Get

- 9-volt battery
- insulated copper wire
- metal paper clips
- pencil or large nail

