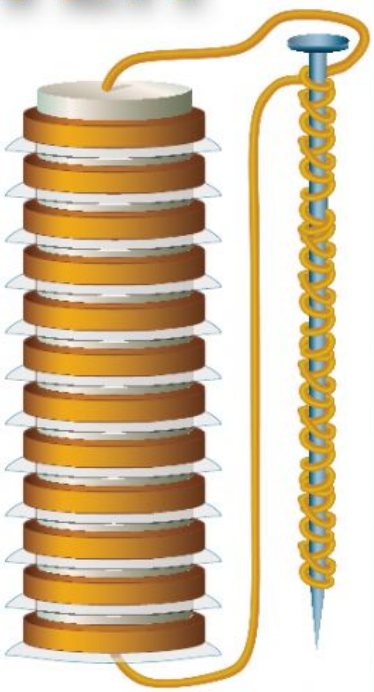
This experiment tells how to make a battery similar to the one Alessandro Volta made. The chemical reaction of salt and vinegar in the presence of copper and zinc makes electricity flow through a wire.

BATTERY POWER

by Gary Gibson, in *Science for Fun Experiments*



1 Find 12 copper coins and zinc washers of similar size. They will need to be stacked. Cut out 12 same-sized circles of blotting paper.

2 Pour vinegar into a glass with a tablespoonful of salt. Soak each piece of blotting paper in the mixture. Stack a coin, then a washer, on a piece of blotting paper. Finish with a washer.

3 Take 6½ feet of thin plastic-coated copper wire. Coil it tightly around an iron nail as many times as you can.

4 Attach one end of the copper wire to the bottom coin and the other to the top washer.

5 Test your battery by bringing the nail close to a small compass. The nail should make the compass needle swing.

Why It Works

6 The salt and vinegar start a chemical reaction. Negatively charged particles flow through coins to the washers, around the wire coil, and back to the battery.[1] The electric current creates a magnetic field that affects a compass needle.

[1] The negatively charged particles are bits of matter called *electrons*.

Close Reader Habits

What steps and materials are needed to make the battery? Reread the text. **Circle** words and phrases that tell you this.

Think

Use what you learned from reading the technical text to respond to the following questions.

Read all the directions to understand what you're making or doing. Then reread and picture what happens at each step.

1 This question has two parts. Answer Part A. Then answer Part B.

Part A

Which statement **best** describes how an electric current affects a compass?

- **A** The electric current goes from the wire into the compass.
- **B** The electric current works only with thin copper wire.
- **C** The electric current makes the compass needle move.
- **D** The electric current causes the nail to swing near the compass.

Part B

Which **two** sentences **best** show the relationship made in Part A?

- **A** "Pour vinegar into a glass with a tablespoonful of salt."
- **B** "Coil it tightly around an iron nail as many times as you can."
- **C** "Attach one end of the copper wire to the bottom coin and the other to the top washer."
- **D** "The nail should make the compass needle swing."
- **E** "The salt and vinegar start a chemical reaction."
- **F** "The electric current creates a magnetic field that affects a compass needle."

Talk

2 Reread the steps to make and test the battery. Why is it important to follow the steps in the order? What would happen if you didn't, or if you used different materials? Write notes from your discussion.

Write

3 **Short Response** Explain why it is important to follow the steps in order and use the proper materials. Use details from the text to support your answer. Use the space provided on page 59 to write your answer.

HINT Don't just describe the steps and materials. Explain why the steps and specific materials are necessary.