10 Testing for conductors and insulators

Electricity can only flow through some materials. These are called conductors.

We may take it for granted that electricity flows in a wire. But why doesn't it spill out of the wire and flow through the air, or through ourselves?

The answer is that electricity can only travel through certain substances.

Conductors

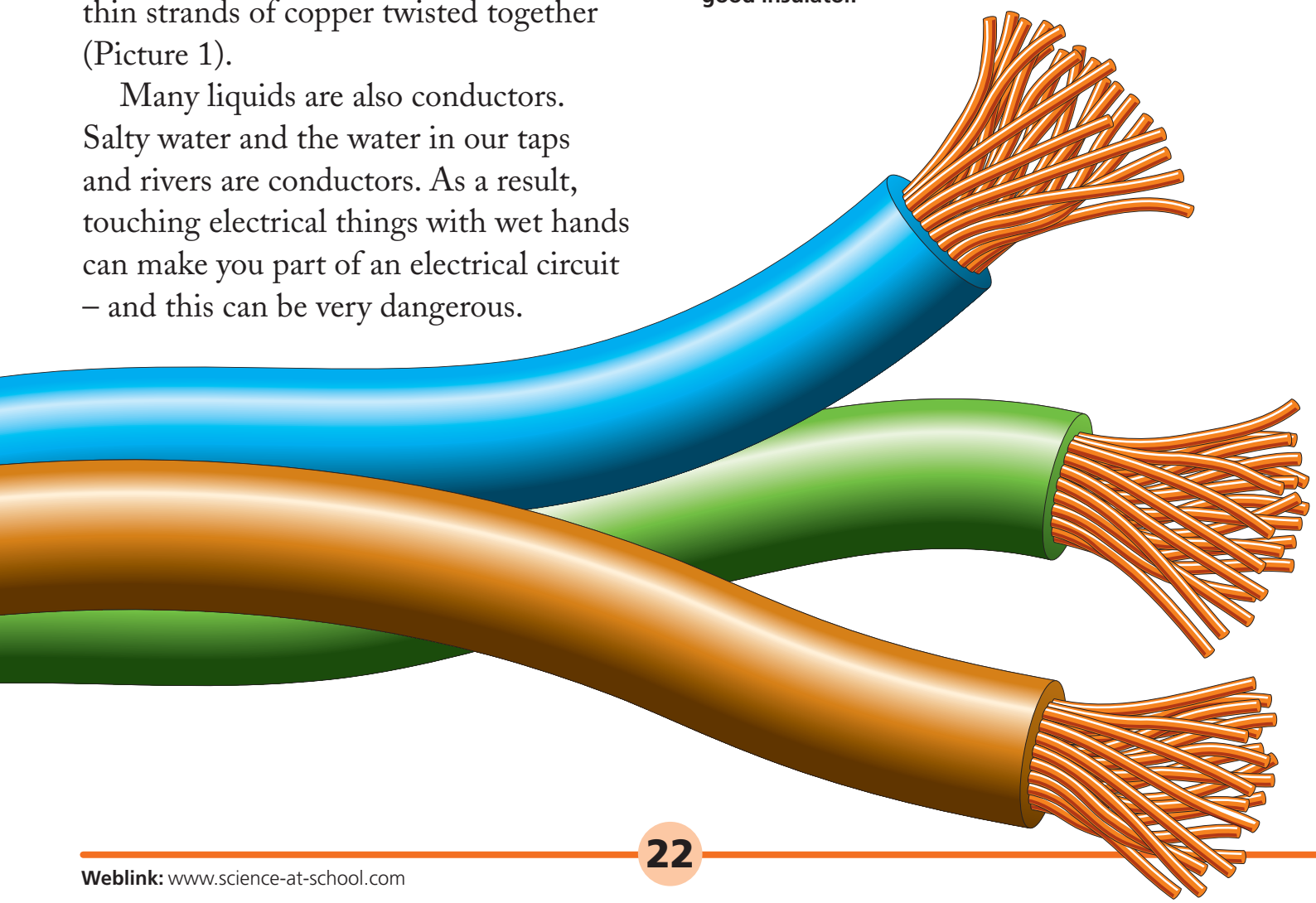
Metals are the most commonly used conductors. Most of the wires you will use to make circuits contain many thin strands of copper twisted together (Picture 1).

Many liquids are also conductors. Salty water and the water in our taps and rivers are conductors. As a result, touching electrical things with wet hands can make you part of an electrical circuit – and this can be very dangerous.

Insulators

Materials that do not let electricity pass through them are called electrical insulators. Plastics are insulators. They are used, for example, as a sleeve around wires (Picture 1), on switches and as plugs. Air is another good insulator.

▼ (Picture 1) These three wires all contain twisted strands of copper, which is a good conductor. The coloured sleeves are made of plastic because it is a good insulator.



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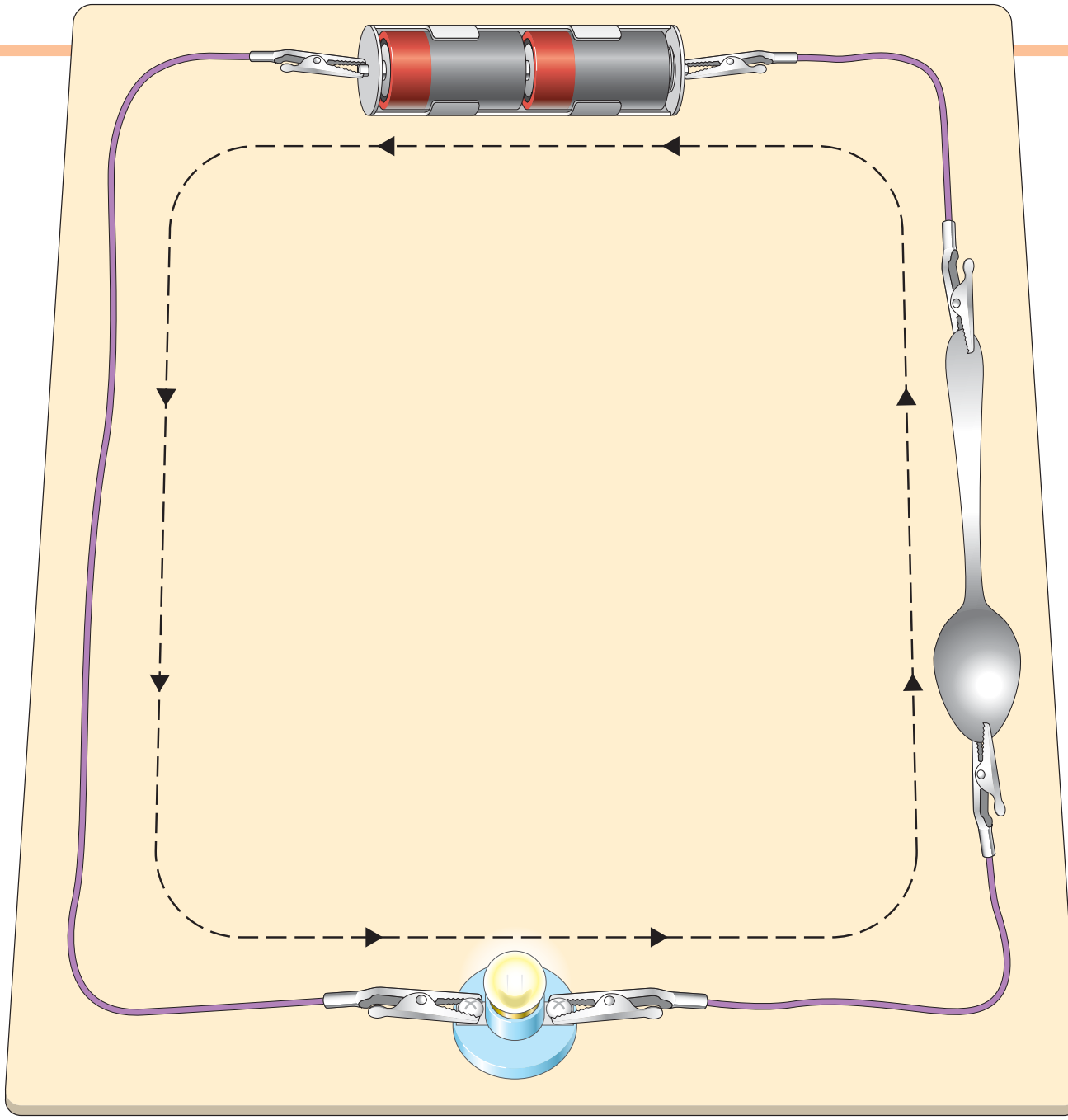

▲ **(Picture 2) In this picture, a metal spoon is being tested. The bulb lights up, proving that the metal spoon is a conductor.**

Conductor or insulator?

One way to find out which materials are insulators and which are conductors is to make a loop (electrical circuit) using the same circuit we have used throughout this book (Picture 2). If the object being tested is a conductor, the electricity will flow through the whole circuit and the bulb will light up. If the object is an insulator, the electricity cannot flow around the circuit and the bulb will not light up.

Summary

- **Electricity will only flow through a conductor and will not flow through an insulator.**