6 Electroplating

Electricity can break materials apart and release pure metals.

(Picture 1) Plating is a common way of getting a smooth, even finish. The tap (left) has been plated with a very shiny metal called chromium; Above, a real orchid flower has been plated with gold and made into a brooch.

Most materials are made of two or more substances that are locked together with chemical 'glues'. A rock, for example, is made of many substances locked together. But if you can find the right method, it is possible to 'unglue' the substances and release them. One method is to pass an electric current through the material. This is how some metals are removed from rocks.

Using electricity it is also possible to get metals to form a thin, even coating over other materials. This is called **ELECTROPLATING**.

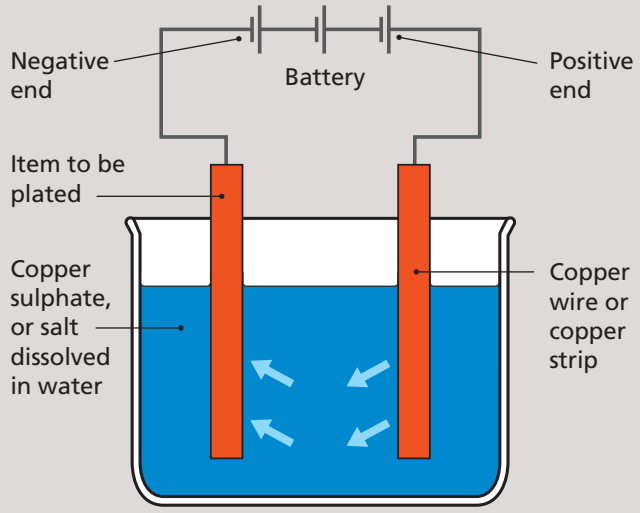
Many things are electroplated with shiny metals: from the silver on cutlery, to the chrome on taps or the gold on brooches (Picture 1).

How electroplating works

It is quite easy to electroplate the surface of a metal object with copper using a chemical called copper sulphate or even common salt (a teaspoonful in a glass of water), a copper wire and a bicycle battery.

In Picture 2, a key is being electroplated with copper. The key forms part of an electric circuit. A wire is connected from the key to the negative side of the battery. A copper wire is connected to the positive side of the battery. The other end of this wire is stripped. This will be the source of copper for electroplating. Alternatively, a small strip of copper can be used (Picture 3). Once the circuit is connected up, the key, metal strip or any other metal object you choose, starts to become plated with copper.

How electroplating works: As electricity flows from the battery and through the liquid, copper moves through the liquid. It plates the object connected to the negative side of the battery.



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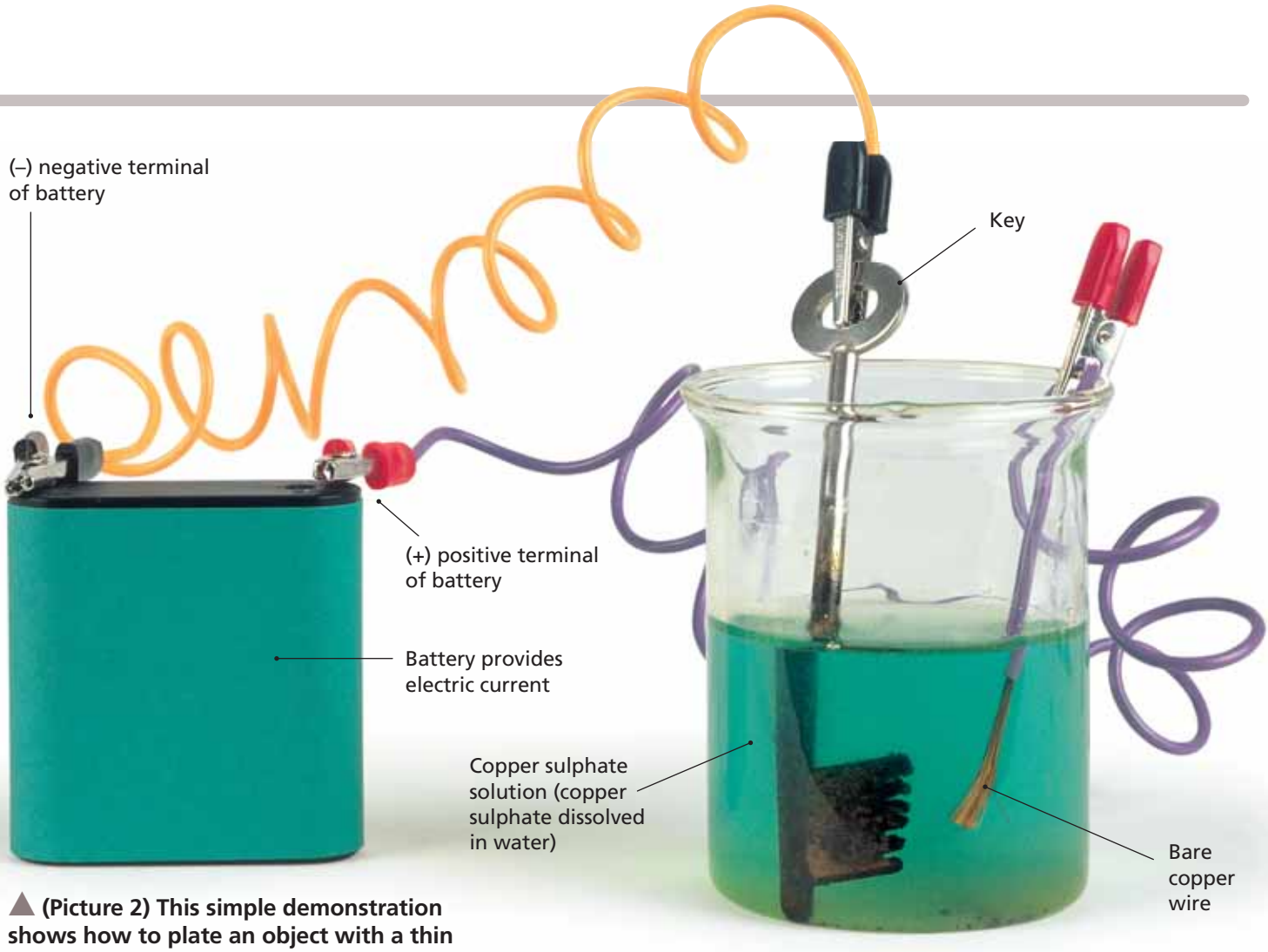
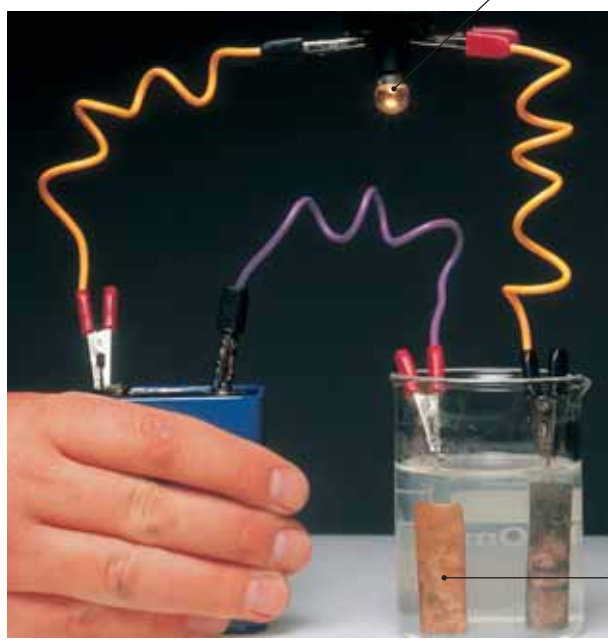


▲ **(Picture 2) This simple demonstration shows how to plate an object with a thin layer of copper. But beware. This process is not reversible, so once the copper has plated the object, you will not be able to rub it off, so don't use anything valuable.**

Summary

- **Electricity can be used to change substances.**
- **Electroplating transfers a metal from one object to another.**
- **A special liquid is needed for electroplating.**



◀ **(Picture 3) This is the same demonstration, but salt dissolved in water is used instead of copper sulphate. A bulb has also been connected into the wiring to show that electricity is flowing. Notice that the liquid bubbles as the plating takes place. A key can be used instead of a metal strip.**

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