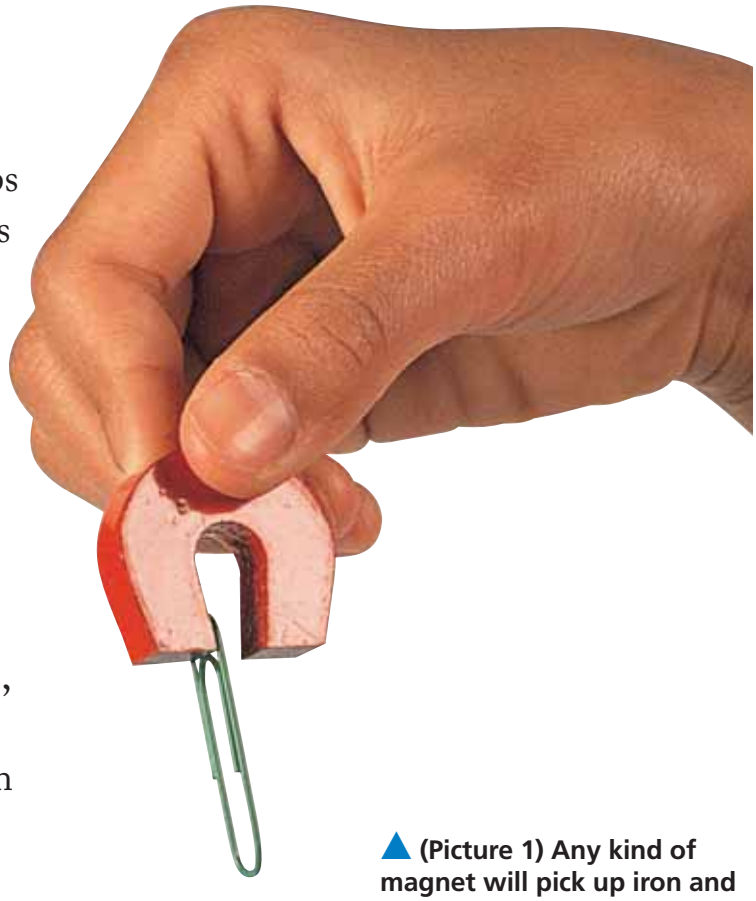
7 Making magnets

You can make a magnet – but you have to work hard.

If you hold a magnet over a pile of paperclips, you will find that the paperclips mysteriously rise up and attach themselves to the magnet (Picture 1).

You will also see that the paperclips line up, one hanging from the other. This means that, simply by touching the magnet, the paperclips have become temporarily part of the magnet.



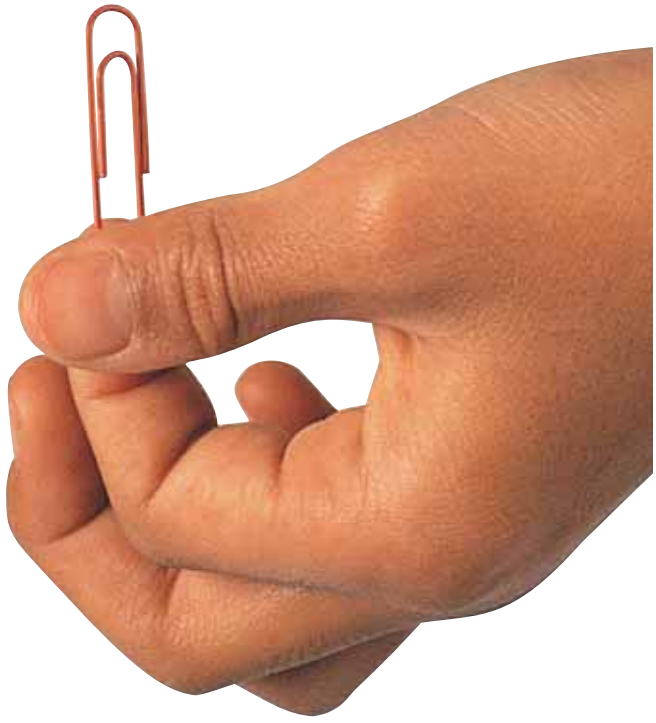
▲ **(Picture 1) Any kind of magnet will pick up iron and steel objects like paperclips.**

Long-term magnets

You can make pieces of steel, such as nails, into magnets. You simply stroke the nail with the magnet, moving the magnet from the centre of the nail to one end (Picture 2). When you come to the end, you lift it away, then stroke it across the nail again, starting from the middle of the nail.

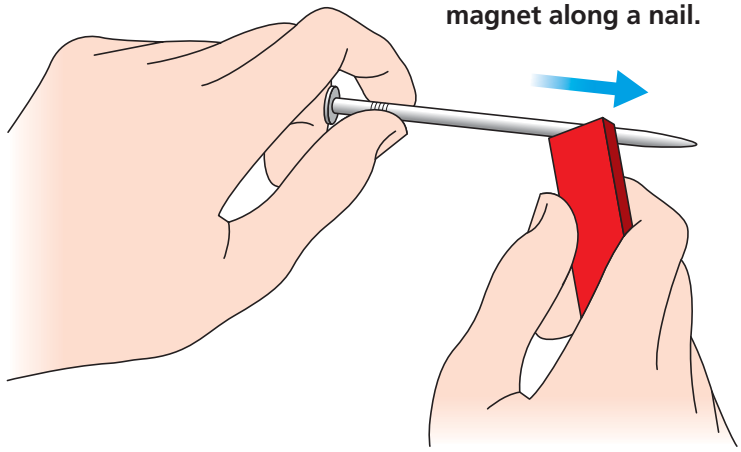
Do this a few times, then turn the magnet around and stroke the *other end* of the magnet across the other half of the nail.

A nail treated in this way will stay magnetic. It will not lose its magnetism. It is called a **PERMANENT MAGNET**. Now you should be able to pick up paperclips with the nail (Picture 3).

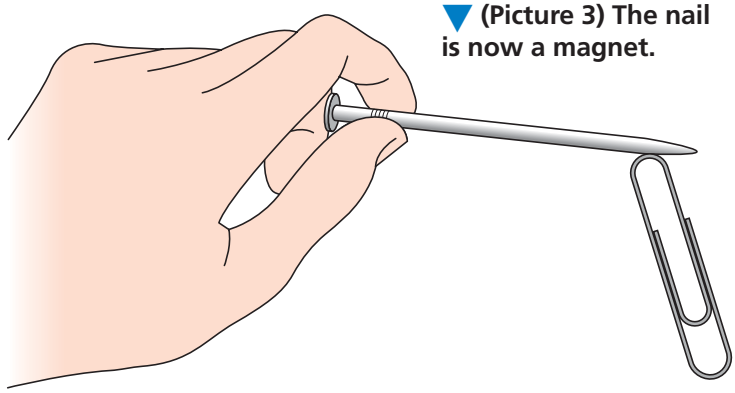


Short-term magnets

You had to work hard to make the nail into a magnet, so it is not surprising



▼ (Picture 2) You can make a long-term, or permanent, magnet by stroking a magnet along a nail.

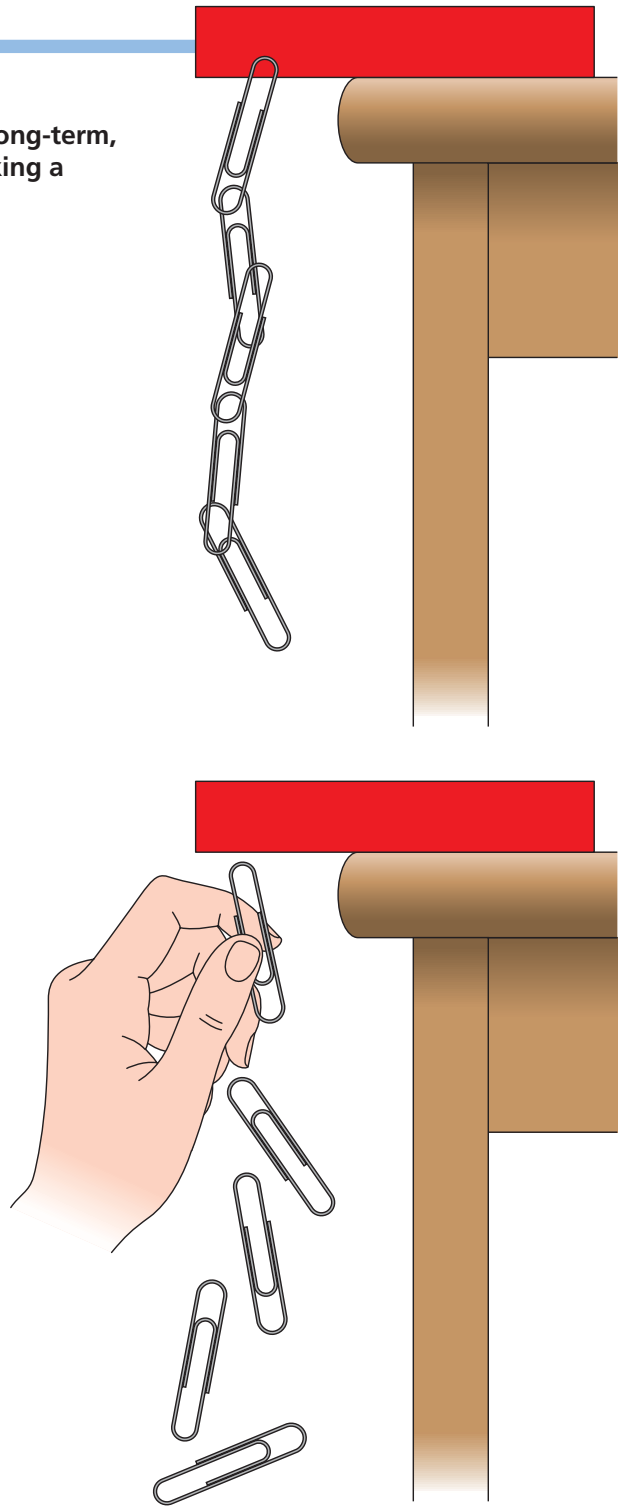


▼ (Picture 3) The nail is now a magnet.

that not everything picks up magnetism quickly. If you place a bar magnet over the edge of a table you can get a long line of paperclips to hang from it (Picture 4).

Now pull one paperclip off the bottom. All the rest should hold fast. Put it back again.

Now take off the top paperclip. All of the other paperclips will fall to the ground. The clips haven't become magnetic at all: they just took up the magnetism from the bar magnet while they were touching it.



▲ (Picture 4) Several paperclips can be hung from a magnet – the stronger the magnet, the more paperclips it will hold.

Summary

- By stroking iron and steel with a magnet you can make a new magnet.
- You do not make a magnet simply by touching iron or steel to a magnet.