# Does science tell the truth?

###### Lesson 2: Pupil Resource 1

**The Canals of Mars**

Once there was a man who loved Mars (not the bars - the planet!). His name was Giovanni Schiaparelli (Skeeaparel-li). He looked rather like a gentlemen’s hairdresser but in fact he was in charge of an *observatory* in Italy. Giovanni first observed Mars in 1877 through a big observatory telescope.

It was one of those rare times when Mars is orbiting close to Earth (about every 25 years and last time it happened was in summer 2004) and even with the naked eye you could see the little bright ‘star’ with the red-orange twinkle. Of course it isn’t really a star, it just looks like one. You could say, like the Milky Way isn’t really milky, it just looks that way!

Back to 1877. Giovanni stared harder and harder through his telescope. His eyes ached as he tried to make out details on the red planet’s surface, to find something exciting that nobody had found before.

‘I’ve done it! I’ve found something!’ he shouted (in Italian of course). ‘I see lots of lines, straight lines, criss-crossing the surface of Mars! Canali! Canali! ‘

‘Canali’ means ‘channels’ in Italian. Giovanni called the network of straight lines that he thought he saw ‘canali’ and drew a chart of Mars with them drawn on. He gave them all names. Most other astronomers couldn’t quite make out the lines that clearly when they looked through their telescopes but no matter – it was too exciting for words!

In English ‘canali’ sounds very much like ‘canals’ as I’m sure you will agree. That was the word used in the British and American newspapers.

**CANALS FOUND ON MARS** read all the headlines. Of course there was no TV in those days, or just think of the even greater fuss there would have been. All the newspapers sold out as people wanted to know more.

‘Canals – that means there must be life on Mars! Schiaparelli has proved there is life on Mars! Canals have to be dug out by someone don’t they! Are the canals filled with water? Do the Martians travel along them on boats?’

Everyone’s imaginations got into gear. Every imagined lots of little green men with spades all digging away at a great big trench, wiping away red desert sand from their eyes? You’ve got it. Funnily enough, canals were all the rage in England at the time; everyone knew someone who had a dad or an uncle who was working as a navvy on the English canals (and hard work it was too!). Perhaps that’s why the idea caught on.

**BUT** it was all a **GREAT** mistake.

There is one special difference between the word ‘channel’ and the word ‘canal’.

This difference is that a channel is natural, like a mountain or a valley. But a canal is man-made. It’s easy to look back and see other people’s mistakes isn’t it?

To carry on. A rich American astronomer called Percival Lowell had always been excited by Mars. In 1894 he built himself a new observatory in the Arizona desert, specially to find out more about the ‘canals’ and the ‘Martians’. He studied Mars for 15 years. (That’s longer than you’ve been alive, and nearly as long as I have.) Percy gave lectures and wrote books on the Martians, describing exactly how they built their canals.

*‘The Martians built these huge canals to bring melting water from the north and south poles of Mars, to irrigate the dusty deserts in the middle.’* It all made sense, in an Earthling kind of way.

He drew Martian maps showing exactly where they were. They sold like hot cakes. Everyone was full of amazement to hear of an advanced civilization living so close to Earth. Meanwhile Percy carried on using his telescopes, looking for *evidence* of towns and cities. Everyone except a few cautious scientists believed him. After all, he had the best telescopes, in the biggest most modern laboratory! These were new, exciting facts and Percy had *proved* them to be true. People gazed up at the night sky with a new wonder. Stories and plays were written about Mars and Martians. Church leaders gave sermons on God’s creation being everywhere, not just on Earth. Everyone started thinking differently about life, the universe and all that.

Belief in Martians went on a long time. In 1938 there was a hoax broadcast about an invasion of Earth by little green men. A man called Orson Wells, who liked playing tricks on people, made the broadcast. There was mass panic!

But of course, we know differently now. Poor enthusiastic Percy had seen what he *wanted* to see, not what was really there. His telescopes were not as good as telescopes today, and what he was really seeing were just dark patches and wiggly lines on the surface of Mars, which his brain had connected together and thought of as canals. He *believed* he had found *evidence* and *proof* but it was all based on misunderstanding – a mis-translation of canali into canals instead of channels. Also, of course, Percy was seeing what he wanted to see – a very dangerous trap we can all fall into, and not just in science!

In the 1960s technology had moved on. Now we had televisions, cameras and space probes. The space race was on. Images of Mars taken by the Mariner spacecraft finally convinced everyone that there were no canals and no sign of any Martians. Most people felt disappointed. Are we alone in the solar system after all? It had been nice for a while to think we had company.

So what are the morals to this tale? Think them up yourself or see if you agree with mine:

Don’t let your brain trick you into thinking you can see something clearly when you can’t.

Don’t let your imagination run away with you when you’re looking at the natural world.

Do make sure you’ve understood what someone else is saying – especially if it’s in a different language!

**Image Credit**: [www.nasa.gov.uk](http://www.nasa.gov.uk)