

# First True Stories

## Suspension Bridges



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Have you ever seen a suspension bridge? “Suspension” means “hanging”. A suspension bridge hangs from towers. The picture shows a suspension bridge. It crosses from the land to an island. The middle part is the hanging part. This part is called the deck of the bridge. This bridge was designed by Thomas Telford.

Can you see the great curved cables? Can you see the towers they hang from? Telford made his bridge extra strong. He did this by putting in supports. You can just see them in the picture. They look like many tiny lines running down to the deck from the cable. Telford's bridge opened in 1826. In those days suspension bridges were a new idea.



Here is a smaller suspension bridge. Can you see the deck? Can you see the cables and supports? The towers are right at the front of the picture. This little bridge did not cross to an island. It crossed a river. It made a way for people to get between two little towns. The towns were called Broughton and Pendleton. The rich man who owned the land had the bridge built. He wanted the little towns to have a grand bridge like Telford's. But this bridge was not so well built as Telford's bridge.

No picture now exists of the 1826 Broughton Bridge. This photo shows the replacement suspension bridge built in 1883.

On 12th April 1831 some soldiers were going home from a practice on the moors. They had to cross the little bridge. There were seventy-four soldiers. They marched along in rows of four. As they went over the bridge they felt something funny. The bridge began to wobble in time to their steps. The soldiers laughed. They began to whistle a marching tune. They whistled in time to the bridge as it wobbled. The bridge wobbled even more.

The first four men had nearly reached the end of the bridge when there was a very loud bang. One of the bridge towers fell down. Then part of the bridge fell into the river. All the soldiers fell down into the river. Many of them were hurt, but no one was killed. There was only a little water in the river at that time.

But why had the bridge broken? The bridge had not been well made. But that was not

the main reason why it broke. It does not matter how strong a bridge looks. All bridges and other buildings have a natural regular speed of vibration or wobble. If something pushes the bridge or building at exactly that regular speed of vibration the vibration gets bigger. It can get so much bigger that the bridge breaks. The soldiers' matching feet had this effect on the bridge.

After this accident the British Army made a new rule. If soldiers have to cross a bridge they must not march in step. They must stop marching and all walk out of step with one another. Then no regular vibration or wobble can start. This is called "breaking stride". Soldiers still do this if they cross a long bridge.

## Things to do

1. Find out the meaning of the word **vibration**.

2. Can you march? You can learn!

First of all you can practice on the spot. You need someone to help you by calling out "Left, right, left, right..."

Stand behind one another so that you can see the feet of the person in front of you. Then you can check that your left foot is going up when their left foot goes up and not when their right foot goes up! This is not as easy as it sounds and takes quite a bit of practice.

Now find a recording of some marching music (the American composer Sousa wrote some very cheerful marches) and see if you can keep the "left, right" pattern going in time to the music.

Draw a suspension bridge.