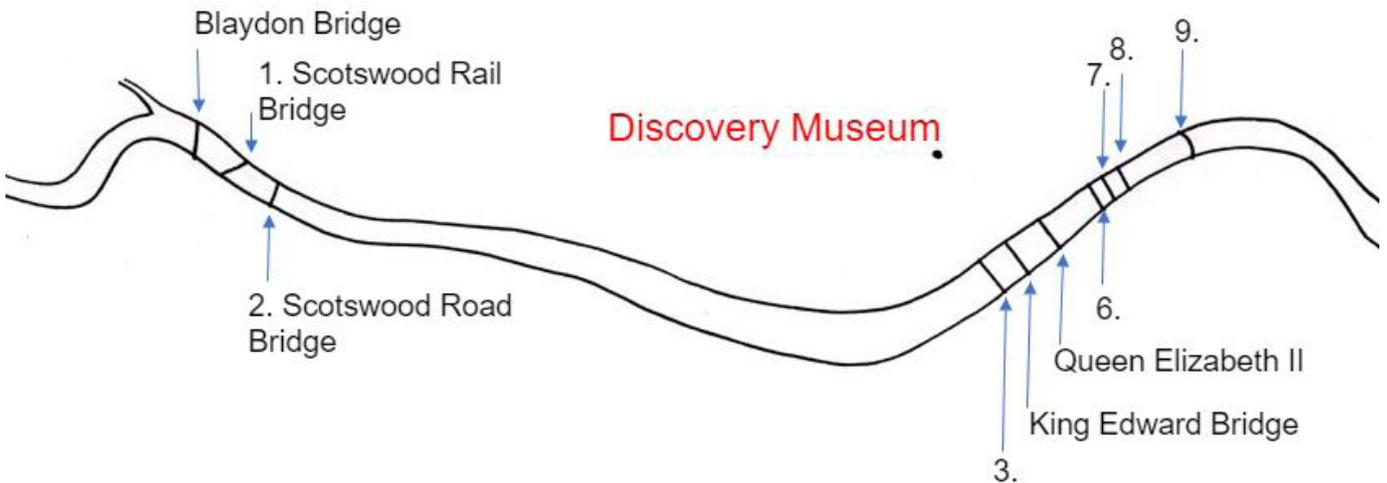


Building Bridges

If you visit the Story of the Tyne or the Tyneside Challenge galleries you might come across some models of the bridges that span the River Tyne. The Swing Bridge model even moves when you turn the wheel.

Below is an illustration of the River Tyne, with lines and numbers to show where the different bridges can be found. Can you work out the names of the bridges? We've given you a few to start you off, now see if you can fill the gaps.



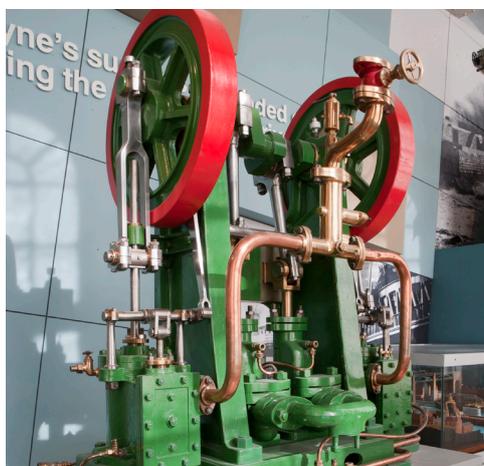
- | | |
|-----------------------------|----------|
| 1. Scotswood Railway bridge | 6. _____ |
| 2. Scotswood Road Bridge | 7. _____ |
| 3. _____ | 8. _____ |
| 4. King Edward Bridge | 9. _____ |
| 5. Queen Elizabeth II | |

Here are a few bridge facts:

1

The High Level Bridge is the oldest bridge that connects Newcastle and Gateshead. It was designed by Robert Stephenson.

2



The Swing Bridge is powered by hydraulics to make it spin. You can see one of the original steam pumps from this mechanism at the Discovery Museum.

3



2000 years ago, when Newcastle was called Pons Aelius and inhabited by the Romans a different bridge spanned the river. This is thought to have been the end of Hadrian's Wall before it was extended to the Wallsend fort, Segedunum.

4

The medieval Tyne Bridge was swept away during a flood in 1771. This bridge also had many buildings on it.

5

The Tyne Bridge was painted its own unique green. It was a paint made by J. Dampney Co. of Gateshead.

Bridges are constructed in such a way as to make them strong and stable, and to be able to carry heavy loads for many years.

This is the deck or surface of the bridge



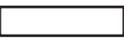
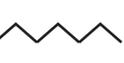
These are called piers. They hold the bridge up over the water. Some bridges have lots of piers and some have no piers, like the Tyne Bridge.

The distance between two piers is called a span. Bridges with no piers are called single span bridges.

These are the abutments they connect the deck to the ground and give the bridge extra strength.

Have a go at the bridge penny challenge to see which shape of bridge is the strongest. Make a guess first before you have a go. You might be surprised at which works best!

For weights we suggest you use pennies or pieces of Lego. You will also need something to use as abutments (the supports at each end of the bridge). You could use boxes, stacks of books or even two chairs. Make sure your pennies are added on the bridges span!

		Prediction - how many weights do you think the bridge will hold?	How many weights did the bridge hold?
	Flat paper		
	Arched paper		
	Paper folded in half		
	Corrugated (pleated) paper		

Which bridge shape was the strongest? _____

Have a look at this photograph of the Tyne Bridge.
See if you can spot some of those shapes in the structure of the bridge.



Why don't you try building your own bridge using some of the ideas from your experiment?

You could use any materials from your recycling bin.
Maybe toilet tubes or bottles to hold the bridge up with pieces
of card and paper to build the shape of the bridge.

Share your finished structure with us by emailing learning@discoverymuseum.org.uk
or on Twitter with [#DiscoveryatHome](https://twitter.com/DiscoveryatHome).