



## A Two-Arch Bridge

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**WHAT** a beautiful bridge this is! The bridge deck is a single arch that sweeps from one bank of the river to the other. It is inclined at about  $10^\circ$  to the horizontal. And it is held in place by stay cables from another arch. The two arches are at  $90^\circ$  to each other and are anchored at the same abutments.

This is a pedestrian bridge over River Tyne between Newcastle and Gateshead in north-eastern England. It is known as the Millennium Bridge and is dubbed as the only bridge of its kind in the world.

Newcastle is usually known as Newcastle-upon-Tyne. It is well known to all readers of the English language as its name appears in the proverb "Don't bring coal to Newcastle". It was once an important coal-producing place. Nowadays, however, as Newcastle and Gateshead develop side by side on opposite banks of River Tyne, the residents of these two places regard theirs as one large conurbation known as Newcastle-Gateshead.

My wife and I had come to Newcastle at the end of our travel in Scotland because we wanted to visit the Hadrian's Wall. This wall of stone that stretched from the east coast to the west coast of northern England over a distance of 122 km, was built in 122AD by the Roman emperor Hadrian to defend his empire from the harassment of the barbarians from the north. Most of the wall has since collapsed and disappeared. We went to Wallsend about 6.5km east of Newcastle to look at the remains of a stretch of the wall and a fort. We also visited the museum on the ground of the fort. It included a reconstructed Roman bath.

Back to Newcastle, we did not expect to find such a beautiful bridge over River Tyne. The Millennium Bridge is the only pedestrian bridge among many bridges over the river.

From our hotel we walked to the Quayside. The first structure to catch our attention was the Tyne Bridge that looked like a mini-Sydney Harbour Bridge. As we walked



onto the middle of the adjacent Swing Bridge to get a good profile of the Tyne Bridge, the two-arch Millennium Bridge came into view in the distance. Another striking structure appeared at the same time. It was a cocoon-like building on Gateshead side of the river. It was a concert hall known as the Sage.

As we approached the Millennium Bridge, its profile gradually metamorphosed from that of a simple tied arch to an inter-play of two arches tied to each other at their ends. As we got closer and closer to the bridge, its upper arch became more and more compressed to finally become a straight line as the lower arch bowed more and more to become a prominent arch. In the meantime, the sun was sinking deeper and deeper beneath the horizon and the darkening sky brought out more and more lights from the buildings. This combination and inter-play of lights and lines culminated in the spectacular picture that you are looking at now.

We celebrated that wonderful evening on River Tyne by attending a ukulele group performance in the Sage. A ukulele is a small four-stringed guitar originally from Hawaii. ■