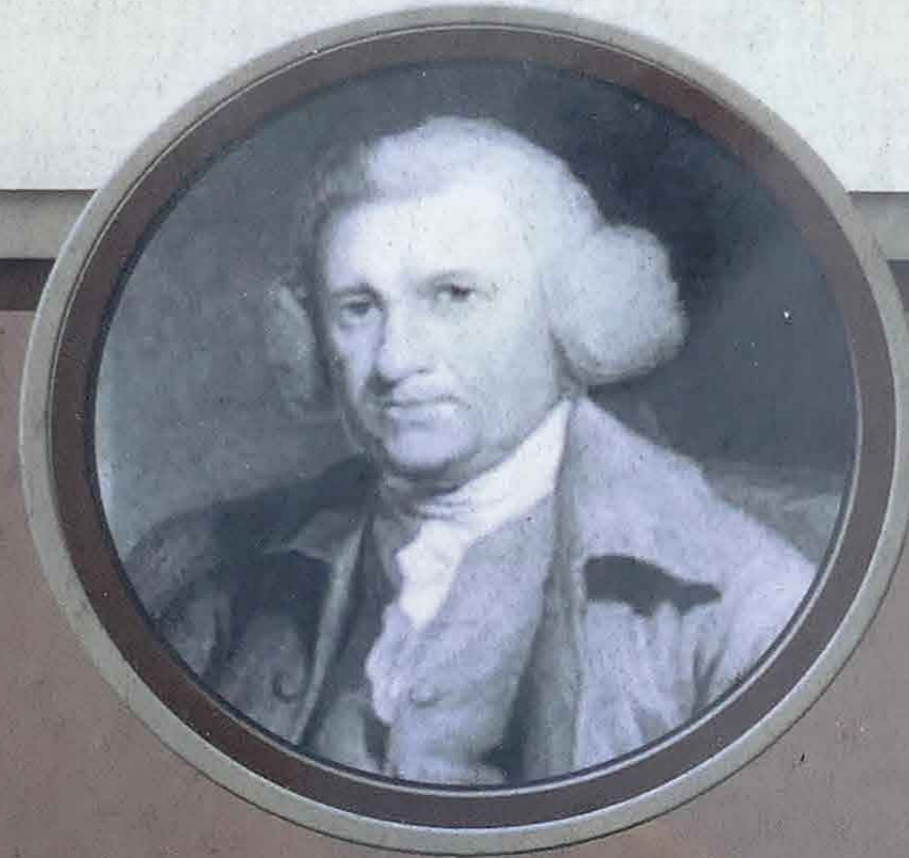


# SMEATON'S ARCHES

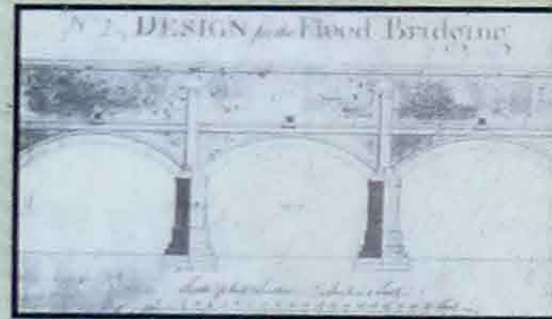


**John Smeaton (1724- 1792)**  
Smeaton, who was a Fellow of the Royal Society, is regarded as Britain's first Civil Engineer.

Smeaton used his experience in engineering and physics to produce the 'Smeaton Co-efficient'. This describes how pressure interacts with the velocity of objects moving through the air.

## Smeaton's Arches

After a bad flood of the area in 1766, Smeaton was called on to design this viaduct, which was built between 1768 & 1770. It was needed in order to raise the road and let water pass, without disturbing traffic to Newark.

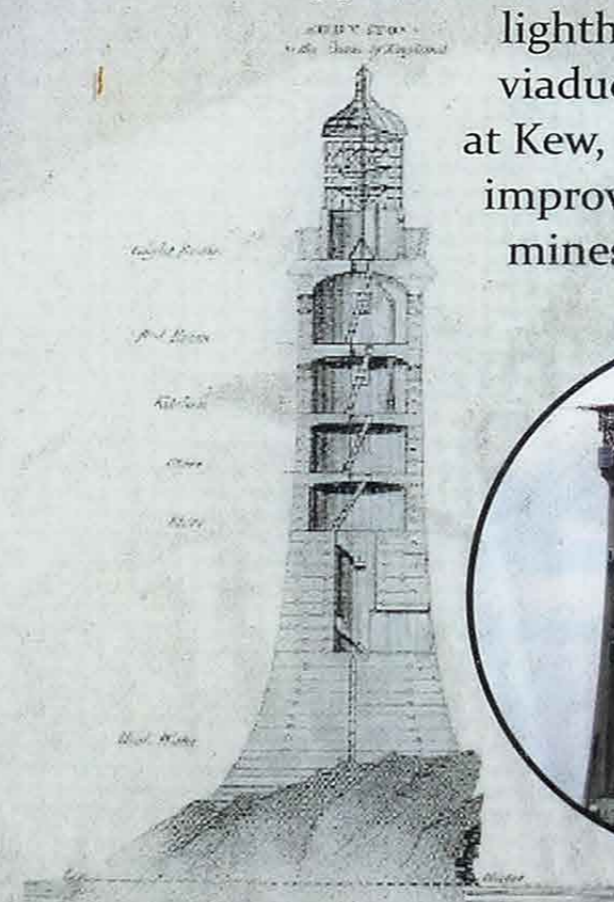


The viaduct measures over a kilometre in length and incorporates 125 arches in twelve separate structures, creating a causeway from Newark to the bridge over the River Trent at Muskham. Originally the arches were all in brick, 12 feet wide and 6 feet high, with brick parapets and stone coping.

The causeway was mentioned in Defoe's 1778 'Tour through Britain' "the vast new raised road... over the flat (which is) often over flooded by the Trent." Proving that whilst other routes were flooded, the new causeway allowed easy passage to the town.

## Ingenuity

Smeaton is best known for his engineering projects. He applied his wide range of skills to projects that included lighthouses, canals, harbours, bridges and viaducts, water engines for the Royal Gardens at Kew, industrial mills across Britain and improving the design of steam engines used in mines in Cornwall.



Smeaton's Eddystone Lighthouse



Eddystone Rocks with remains of Smeaton's lighthouse

Many projects used another development of Smeaton's - Hydraulic Lime mortar that could set underwater.

## Civil Engineer



Smeaton's Bridge, Perth



Ramsgate Harbour

To distinguish himself and his colleagues in their developing field, Smeaton invented the term of 'Civil Engineer' to describe his works. Until this time, most engineers had been trained by the Army at the Royal Military Academy, Woolwich. Smeaton founded the Society of Civil Engineers in 1771.

More recently, the causeway has been widened and modernised to cope with increased traffic flow. The western side of the causeway has been added to, following the same pattern of the original but in concrete, with brick parapets, to make the route wide enough for traffic and pedestrians, ensuring that the causeway designed by John Smeaton will carry on providing a dry route to and from Newark.

