

MEDICINE IN THE FIRST WORLD WAR



History, Science and Literacy



Key Stage 3



Session Two
1 – 2 hours

In this session you will explore how many of the innovations of the First World War have impacted on medicine today.

Medicine and Innovation

Harry Brearley and the invention of stainless steel

Harry Brearley was born in Sheffield in 1871. He was the son of a steelworker. He left school at 12 years old and became a labourer at the company where his father worked. Harry worked hard and was promoted to the position of general assistant in the company's chemical laboratory. He took evening classes and learned how to specialise in steel production techniques and chemical analysis. By the time Harry was in his early thirties, he had a good reputation in his chosen industry.

In 1908 two of Sheffield's largest steelworks combined to launch a new research laboratory. Harry was asked to be the lead on the project.

In 1912, a weapons manufacturer asked Harry to produce a metal that would not be damaged by heat or corrode. As a renowned metallurgist, Harry began researching new steels that would not erode at high temperatures. After months of experimenting with adding chromium to steel, Harry created a new alloy that was resistant to chemical attack. He called this new discovery 'rustless steel'.



Stainless steel surgical instruments

The discovery revolutionised the metal industry and became a key part of the modern world. Coming from Sheffield, known as the 'Steel City', Harry was excited at this discovery and saw the potential for the new metal to be used in other objects as well as military weapons.

Today, stainless steel is used to manufacture many different products including those used for medicine, such as surgical instruments.

Where was Harry born?

What was Harry's first job after leaving school?

How do you think Harry became an industry expert in steel working?

What did Harry add to steel to improve it and make it stainless steel?

What did Harry first call his new invention?



Sheffield city centre

What is the nickname of Sheffield?

Properties of Steel

Research the properties of steel and list them below.

What properties make stainless steel a good material to make medical equipment from?

Can you name one other use of stainless steel? What properties make it the best material to use for this use?

Other Inventions in the First World War

Sanitary Towels

The company Kimberley Clark had been searching for a material that was more absorbent than cotton but cheaper to make and they invented a material called Cellucotton before the First World War. When the US entered the First World War in 1917, they began using Cellucotton to make wadding for bandages. Red Cross nurses on the battlefield realised the benefits of the material for their own personal hygiene and it was this unofficial use that made the company's fortune.

Blood Banks

The British Army began treating wounded soldiers with blood transfusions by directly transferring blood from one person to another. It was Captain Oswald Robertson, a US Army doctor who realised the need to store blood before the injured arrived. He established the first blood bank on the Western Front in 1917. He used sodium citrate to stop the blood clotting and becoming unusable.



In Flanders Field

Lieutenant-Colonel John McCrae was a Canadian poet and physician during the First World War. He was working as a surgeon during the Second Battle of Ypres in Belgium in 1915 when a friend of his died. His burial inspired McCrae and he wrote the famous war memorial poem 'In Flanders Fields'.

Put yourself in the place of a medic on the front line during the First World War.

Complete the spider diagram and fill it with your emotions and senses of what you see, hear, feel, smell, and even taste around you.



