

# Muslim Contributions That Changed the World

## Coffee

The history of coffee is quite interesting. An Arab shepherd named Khalid from Ethiopia noticed that his goats had more energy after eating a special berry. Khalid boiled these berries – and the result was coffee! From Ethiopia coffee spread to Yemen. Here it was used for religious purposes; the Sufis would drink coffee to stay awake all night and pray on special occasions. Coffee arrived in Turkey and Makkah in the late 15th century, Italy in 1645, and England in 1650. The Arabic name “qahwa” became “kahve” in Turkish, then “caffé” in Italian – and of course “coffee” in English.

## Flight

The first person to ‘fly’ was Abbas ibn Firnas in 852AD. He was a poet, astronomer and an engineer. His first attempt consisted of a cloak covering a wooden frame. He jumped from a minaret of the Grand Mosque in Cordoba. His contraption worked like a parachute instead, creating what is thought to be the first parachute. He walked away with minor injuries. In 875, at age 70, he tried again after perfecting a machine made of silk and eagles feathers and managed to stay in the air for around 10 minutes – however, the landing did not go well. He surmised that the problem was the lack of a tail to help soften the landing. He is honoured by having both a crater on the moon and Baghdad international airport named after him.

## Vaccination

Children in Turkey were vaccinated with cowpox to prevent smallpox, establishing the technique of inoculation which is now essential in many aspects and occasions in life. Around 50 years later, in 1724, the wife of the English ambassador to Turkey introduced this practice into Europe.

## Fountain Pen

In 953, the Sultan of Egypt demanded a writing tool which would not leak ink or stain his clothes. The ‘fountain pen’ was devised. Just like modern pens, this pen had a reservoir which held the ink, gravity and capillary action moved the ink to the writing tip of the pen, enabling it to write.

## Camera

The first camera was invented by Ibn Al-Haitham in the 10th century. He was a mathematician, a physicist and an astronomer. He understood that light enters the eye – whereas previously people believed, as the ancient Greeks did, that our eyes emit rays which allow us to see. By observing how light came in through a hole in window shutters, Ibn Al-Haitham realised that a smaller hole yielded a better picture. He created the first ‘Camera’ Obscura, named so from the Arabic word “qamara” meaning a ‘dark room’.

## Soap

Muslims perfected a recipe for soap, which is still in use today. Washing and bathing are important religious obligations before prayer, hence the need to formulate something to aid this. The Ancient Egyptians and the Romans had a form of soap but used it more as pomade. Arab experimenters created a vegetable oil and sodium hydroxide base to which they added fragrant oils e.g. thyme oil. When the Crusaders entered the Arab lands, they earned a reputation of being ‘pungent smelling invaders’ as they did not bathe regularly! In 1759, shampoo was introduced to England by a Muslim entrepreneur who opened Mahomed’s Indian Vapour Baths at the beach in Brighton.

## Surgery

A Muslim surgeon named Al-Zahrawi constructed around 200 surgical instruments in the 10th century, many of which are still recognised today. These include scalpels, forceps, needles, precision scissors etc. When his pet monkey ate his lute strings, he realised that catgut could be used in the form of a capsule to allow medication to be ingested and also be used for stitching internal organs, as it dissolves away naturally. Al-Zahrawi devised ‘fine scissors’ for eye surgery. Another Muslim doctor developed the ‘hollow needle’ technique to extract cataracts from the eye – A technique still used today.

## Quilting

Quilting – sewing two pieces of cloth together with a layer in-between, was brought back to Europe by the Crusaders when they noticed the Muslim armies did not wear armour, but instead wore canvas quilted shirts filled with straw. This was quite an improvement over the chafing that resulted from the metal armour the Crusaders were wearing. Quilted shirts also provided a good deal of insulation and warmth – and hence quilting became very popular in colder regions of Europe like Britain.

## Architecture

Roman and Norman buildings, which used ‘round arches’ were adapted with the discovery of ‘pointed arches’ used in the Islamic World. These were more stronger and able to bear more weight. These can be seen on Gothic cathedrals across Europe. Other Islamic architectural methods utilised include the rose window and ribbed vaulting. The Islamic World’s Dome and Castle-building techniques were introduced to European buildings, including parapets, round towers, battlements and arrow slits. Henry V enlisted a Muslim to construct his castle.



## Chemistry

Islam’s most prolific scientist, Jabir Ibn Hayyan, pioneered many of the basic processes and equipment still used by chemists today. He established the systematic approach to chemical experimentation, also still used today, and is known for separating liquids by taking advantage of the differences in their boiling points. A process known as “distillation”. Jabir Ibn Hayyan also established liquefaction, filtration, evaporation, purification, crystallisation and oxidation. He also discovered sulphuric acid, nitric acid and created the alembic still which is used to create perfumes and rosewater.

## Windmills

Windmills were devised and constructed to draw up water from streams to irrigate vegetation and also to grind corn. The first windmill was created in 634 for a Persian Caliph – 500 years before the first ones were introduced in Europe.

## Printing Press

In 1454, Gutenberg developed the most sophisticated printing press of the Middle Ages. However, movable brass type were in use in Islamic Spain 100 years prior, and that is where the West’s first printing devices were made.

## Mechanical Engineering

In 1206 a Muslim engineer named Al-Jazari published a book called “Knowledge of Ingenious Mechanical Devices”. In it he described more than 50 inventions, including a combination lock and mechanical clocks powered by water and weights. He also explained the use of valves and pistons. He is most famous for discovering the crank-shaft, a key mechanism in nearly all mechanical inventions, which turns rotary motion into linear motion – this can be used for internal combustion engines and to raise water to irrigate crops.



## Mathematics

Around 825AD, there were two Muslim mathematicians known as Al-Khwarizmi and Al-Kindi they were amongst the first to write down a style of Arabic numerals which became the standard in use all over the world. The work of these and other Muslim Math scholars were later established into Europe by Italian mathematician Leonardo Fibonacci. Many of the works of Al-Khwarizmi and Al-Kindi formed mathematical theories and methodology which are still used today including algorithms, trigonometry etc. ‘Algebra’ was named after al-Khwarizmi’s book ‘Al-Jabr wa Al-Muqabalah’. Al-Kindi discovered encryption decoding, number patterns and frequency analysis – these helped decipher the codes of the ancient civilisations.