Copper: The Metal of Civilisation

6000 BC – 3000 BC

6000 BC
Britain separates from the European mainland.

4500 BC
Farming is introduced to Britain from the Continent.

4000 BC
The domestication of horses is thought to have first begun in the Eurasian Steppe.

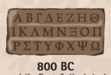
3000 BC
Stonehenge is believed to have been built between 3000 and 2000 BC.

3000 BC – 0

2500 BC
Construction of the pyramids has begun in Egypt.

1800 BC
Britain's first industrial-sized copper mines are dug.

1800 BC
The oldest surviving mathematical text – the Plimpton 322 tablet – is written in Mesopotamia.



800 BC
The world's first full alphabet is created in Greece, based on the older Phoenician alphabet established some 200 years earlier.

0 – 1500

60
Boudica leads a British revolt against the Romans.

1066
King Harold II is killed at the Battle of Hastings.

1215
The Magna Carta is sealed by King John.

1337
The Hundred Years' War between England and France begins.

1500 – 1800

1558
Queen Elizabeth I ascends the throne.

1666
The Great Fire of London occurs.

1707
The United Kingdom is formed.

1776
The Declaration of Independence announces the formation of the United States of America.

1800 – 1850

1815
Napoleon is defeated at the Battle of Waterloo.

1833
The Slavery Abolition Act bans slavery throughout the British Empire.

1837
Queen Victoria ascends the throne.

1850
The Crystal Palace is built in London to house The Great Exhibition in 1851.

1850 – 1900

1854
Florence Nightingale – social reformer and founder of modern nursing – begins improving healthcare for soldiers of the Crimean War.

1859
Charles Darwin's The Origin of the Species is published, forming the foundations of evolutionary biology.

1863
The first London Underground line opens.

1889
Emmeline Pankhurst forms the Women's Franchise League with the goal of securing the vote for women.

1900 – 1950

1914
World War I begins.
Nurse Edith Cavell famously saves the lives of soldiers on both sides, and is eventually executed for it.

1928
Alexander Fleming discovers penicillin.

1939
World War II begins.
Pioneering computer scientist Alan Turing helps break the German Naval Enigma code.

1948
The NHS is founded.

1950 – Present

1955
Rosa Parks' refusal to give up her seat on a bus becomes a symbol of the American Civil Rights Movement.

1969
The Apollo 11 spaceflight takes the first humans to the moon.

1973
Motorola demonstrates the first handheld mobile phone. The first text message is sent in 1992 in the UK, saying 'Merry Christmas'.

2003
The Human Genome Project is completed, identifying around 20,500 genes and contributing to future research in fields from molecular medicine to human evolution.

INFORMATION

In **1989**, Tim Berners-Lee proposed an information management system that would become the World Wide Web. The internet is delivered – via thousands of miles of copper wire – to devices with copper electronic circuits.

MODERN

Copper and copper alloy touch surfaces are being installed in hospitals around the world thanks to Professor Bill Keevil's research – first published in **2000** – showing copper rapidly kills germs that can cause infections.

The Large Hadron Collider – the world's biggest and most powerful particle collider, which began operating in **2008** – is powered by a main line made of copper.

Tungum – a type of brass – was developed in **1918** with the goal of creating a metal with the appearance of 22 carat gold. In addition to its numerous decorative uses, it was used in RAF aircraft and is now used in Royal Navy minesweepers and turret guns.

In **1935**, the first successful test of what would become radar took place in Suffolk. The system relied on a copper anode in a magnetron, and would go on to play a critical role in the defence of Britain during World War II, allowing early detection of enemy aircraft.

The Electricity Act of **1947** introduced a nationwide electricity system that replaced unreliable local systems, providing resilient and interconnected power across Britain. The new system relied on copper for transformers, generators, switches, control equipment and more.

VICTORIAN

The Cutty Sark, launched in **1869**, is a famous example of brass-hulled ships. The copper alloy protected against teredo worms that eat wood, and also helped keep the hull clear of algae and other aquatic organisms, meaning ships could sail faster.

Scottish-born inventor Alexander Graham Bell built the first practical telephone in **1876**. The invention greatly increased demand for copper wire as an electrical conductor.

In **1880**, Cragside in Northumberland became the first house in the world to be lit electrically, which was made possible by copper wiring. It also had the world's first hydroelectric power station in 1870!

INDUSTRIAL

Italian scientist Alessandro Volta invented the first battery in **1800** – the 'voltaic pile' – using zinc and copper electrodes. The introduction of a steady electric supply enabled countless discoveries and innovations throughout the 19th century.

In **1804**, the world's first full-scale steam locomotive undertook the first railway journey, designed and built by Richard Trevithick, inspired by the steam engines that pumped water out of copper mines in his native Cornwall. Locomotives such as his used copper steam boilers.

The first transatlantic communication was sent via subsea copper cables in **1858**. Queen Victoria's telegram to US President James Buchanan took over 17 hours to send in Morse code.

ENLIGHTENMENT

The oldest surviving cannon – cast in **1494** in Turkey – is bronze and weighs nearly 17 tonnes. Over 3,000 such bronze and iron cannon defended the Great Wall of China during the Ming Dynasty (1368–1644).

The UK's oldest manufacturing company, Whitechapel Bell Foundry, was established in **1570** to cast bells from bronze, and they still do it today!

In the **1730s**, English clockmaker John Harrison built his famous sea clocks and watches that helped solve the problem of longitude. The devices could not have been made without extensive use of brass and bronze.

MIDDLE

Coins found in a Shang Dynasty tomb in China, dating back to **1100 BC** are thought to be the oldest surviving example of cast copper coinage. Copper alloys are still used in coinage today.

The earliest form of Roman helmet – the Montefortino, used from **300 BC** to around **100 AD** – was made from brass, an alloy of copper and zinc. A slightly later form – the Coolus – was made from bronze.

One of the earliest examples of a copper roof was the Pantheon in Rome – an immense, circular temple commissioned in **27 BC**. After many years of service, the copper tiles were removed and recycled to create other copper or copper alloy items.

BRONZE

The first recorded medical use of copper appears in the Smith Papyrus, an Egyptian medical text written between **2600** and **2200 BC.** It recommends copper for sterilising chest wounds and drinking water.

The world's oldest copper plumbing system was installed in an Egyptian pyramid circa **2500 BC**, and it's still there today!

Copper was first alloyed with arsenic, and later with tin, to produce harder and more durable tools, weapons and objects by cold working. The earliest bronze item found in the UK is a dagger dating back to around **2200 BC.**

COPPER

Copper axe and arrow heads began to replace flint equivalents as early as **6000 BC**. They were harder and tougher, easier to both make and use.

A copper awl, made in the late **6th** or early **5th millennium BC**, is the oldest metal object found in the Middle East, and an example of how copper was used to create the earliest metal tools.

In addition to its workability, copper has always been prized for its beauty. A copper pendant found in Northern Iraq dates back to **8700 BC.**

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