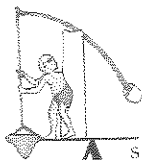


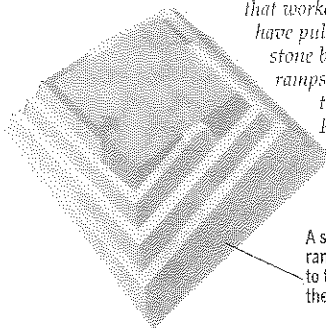
Read the selection below and answer the questions that follow it.



As soon as the first people appeared on the Earth, about half a million years ago, they started to use materials like stone and wood to make their lives more comfortable. These people were the first inventors.

It is difficult to find information about early inventors. We can often only guess at how early people accomplished many of the things they did. For example, we are still unsure exactly how the Ancient Egyptians built their pyramids so accurately.

Some historians think that workers must have pulled huge stone blocks up ramps to make the Great Pyramid.



A sloping ramp leading to the top of the pyramid

Early inventions

Isolated inventions

Before roads and ocean-going ships were built, many communities were isolated. Individual inventors devised their own solutions to common problems, such as how to build solid houses, kill animals or prepare food.

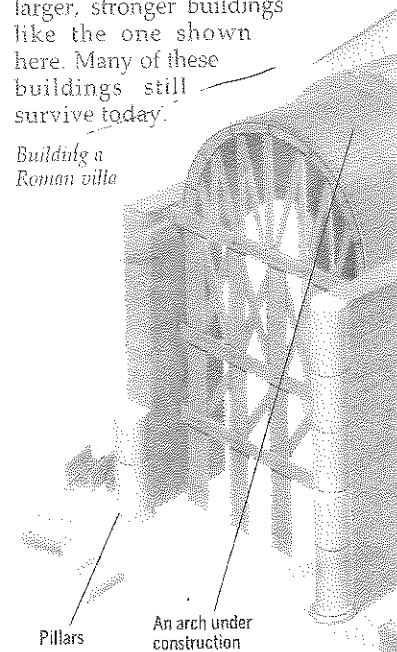
Certain solutions appeared independently in different places around the world, like China, South America and Egypt. But some inventions used by one group of people simply did not exist anywhere else. For centuries the use of gunpowder and the manufacture of silk were only known in China. Inventions only became more universal when people began to travel, trading goods and exchanging ideas.

Early building

The earliest stone buildings were constructed with flat roofs supported by stone beams on

upright posts. Roman builders, using new inventions like arches and concrete, were able to build larger, stronger buildings like the one shown here. Many of these buildings still survive today.

Building a Roman villa



Pillars

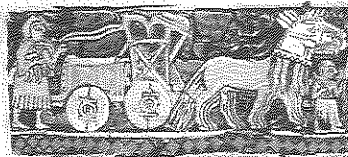
An arch under construction

The wheel

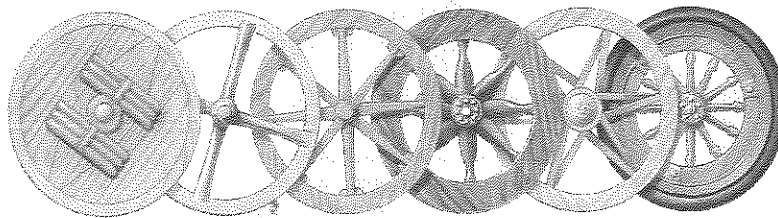
No one knows exactly when or where the wheel first appeared. Most scholars believe that it was first used by potters in about 3500BC, either in Mesopotamia (modern Iraq) or in the central or eastern parts of Europe. The first known transport wheel appears in a Mesopotamian picture dated to c.3200BC. The picture shows a cart with solid wheels held together by metal brackets.

Wheeled transport was not used in America before the arrival of European explorers at the end of the 15th century. This may have been because there was a lack of suitable domesticated animals for pulling carts.

The development of the wheel



Mosaic of 3200BC showing wheels held together by brackets



Wheel in three sections, fixed by brackets

Lighter spoked wheel from Egypt, 1500BC

Greek eight-spoked wheel, c.400BC

A Roman wheel of c. AD100

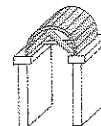
Wheel designed by Leonardo da Vinci, late 15th century

An early motor car wheel

The arch

An arch is made of wedge-shaped stones, held together by pressure. Arches which date from c.3000BC have been found at Ur, in Iraq. The Assyrians and Babylonians also used arches. The 6th-century Ishtar Gate of Babylon is made of sun-dried bricks. The Romans used arches to construct tall buildings like amphitheatres or aqueducts.

Constructing an arch



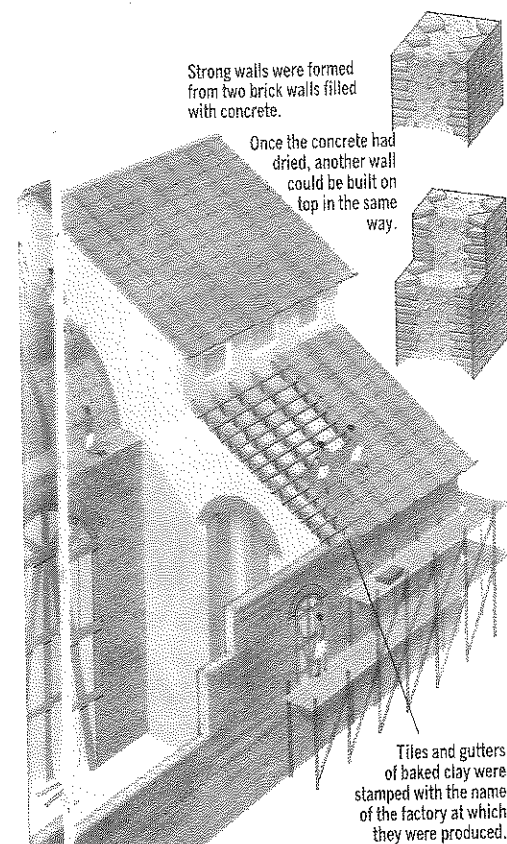
A wooden frame in the shape of an arch was constructed between stone columns.



Wedge-shaped stones were then built on the frame. The weight of the stones held them in place.



Arches were very heavy, so supports called buttresses were used to take the strain.



Central heating

The Romans were masters of home comforts and devised a central heating system in the 1st century AD. It was called the hypocaust and was mainly used to heat public baths, but in cold climates it was also used to heat houses. This Roman invention was forgotten in the West when the Roman Empire collapsed in the 5th century.

A Roman hypocaust

A furnace built underneath the floors produced heat.

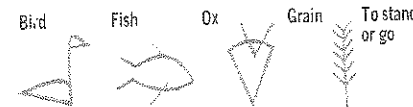
Hot air flowed into channels called hypocausts formed by pillars. The pillars themselves also conducted heat.

Hot air and smoke were directed up inside the walls of the house through flues.

Writing

In about 3200BC, the Sumerians of Mesopotamia were the first people to write. Their script used pictures to represent words and is known as "pictographic writing".

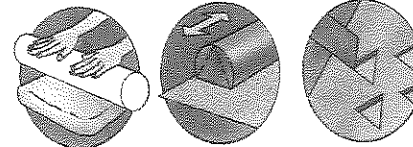
Some early pictographic symbols and their meanings.



A stone tablet carved with pictographic writing (c.3000BC)

Five hundred years later, nearby people, like the Babylonians, Persians and Assyrians, had adapted this kind of writing into a type known as cuneiform (meaning "wedge-shaped"). They used a reed with a triangular-shaped end to make inscriptions in clay.

How to make clay tablets with cuneiform inscriptions



Roll a piece of clay into a pancake and then cut it into small squares.

Using sandpaper, shape the end of a stick into a triangular point.

Press the reed into the surface of the clay to form the symbols.

The cuneiform symbols for ox and grain



By about 1300BC, at Ugarit in Syria, the first alphabet had evolved from cuneiform. It contained 32 letters, each representing a single sound, which could be joined together to form a word. The Greeks adopted this system, which is the ancestor of the European alphabet.

In Egypt, in 3000BC, a writing system known as hieroglyphs was introduced. This used symbols to represent words, sounds or letters.

These Egyptian hieroglyphs spell out the name of the Egyptian queen Cleopatra



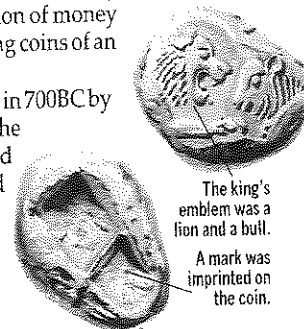
C L E O P A T R A

Money

Throughout history, many different things have been used for barter and exchange, such as copper bars, precious stones, shells and cattle. But as trade between nations increased, a standard, easy form of exchange was needed. The invention of money enabled deals to be carried out quickly using coins of an agreed value.

The first proper coinage was introduced in 700BC by King Gyges of Lydia (now in Turkey). The Lydian coins were made of a metal called electrum (a natural mixture of gold and silver) and were stamped with the king's emblem.

Two sides of a coin issued in about 550BC by King Croesus of Lydia



The king's emblem was a lion and a bull.

A mark was imprinted on the coin.

1 Which two inventions were for centuries only found in China?

- A. gunpowder and silk
- B. coins and the telescope
- C. central heating and concrete
- D. fireworks and the waterwheel

2 In the phrase "a Mesopotamian picture dated to c.3200BC," the abbreviation c. stands for **circa**, which **most likely** means

- F. after.
- G. about.
- H. before.
- J. exactly.

3 The **most** significant reason that Roman builders used arches is that

- A. they were the fashion of the time.
- B. few stones were needed to build them.
- C. the curved shape prevented snow build-up.
- D. they provided increased strength to buildings.

4 The reason that buttresses are used is to

- F. support the weight of an arch.
- G. retain heat in a large structure.
- H. make a building appear larger.
- J. provide a decorative feature on buildings.

5 According to the passage, what was **not** used in America until the late 1400s?

- A. central heating
- B. wedge-shaped stones
- C. domesticated animals
- D. wheeled transportation

6 Which of the following objects is **not** mentioned in the passage as having been used for barter and exchange?

- F. shells
- G. cattle
- H. glass beads
- J. precious stones