

A PRIMORDIAL TYPE OF CONCRETE

The Romans are generally credited as being the first concrete engineers, but archaeologists have found a type of concrete dating back to 6500 BC, when stone-age Syrians used permanent fire pits¹ for heating and cooking. These fire pits, built from local limestone, showed a primitive form of calcining² on the exterior faces of the limestone rocks that lined the fire pits. This probably led to the accidental discovery of lime as a fundamental building material. The newly discovered technology was widely used in Syria, as central lime-burning kilns were constructed to supply mortar for rubble³-wall house construction, concrete floors, and waterproofing cisterns.

Lime, quicklime, and burnt lime are the common names for calcium oxide, a grayish-white powder, whose discovery as a building material opened the door for many other improvements as well.

In Europe, archaeological evidence for early use of concrete is also found from along the banks of the Danube River, where in approximately 5600 BC it was used to make floors for huts.

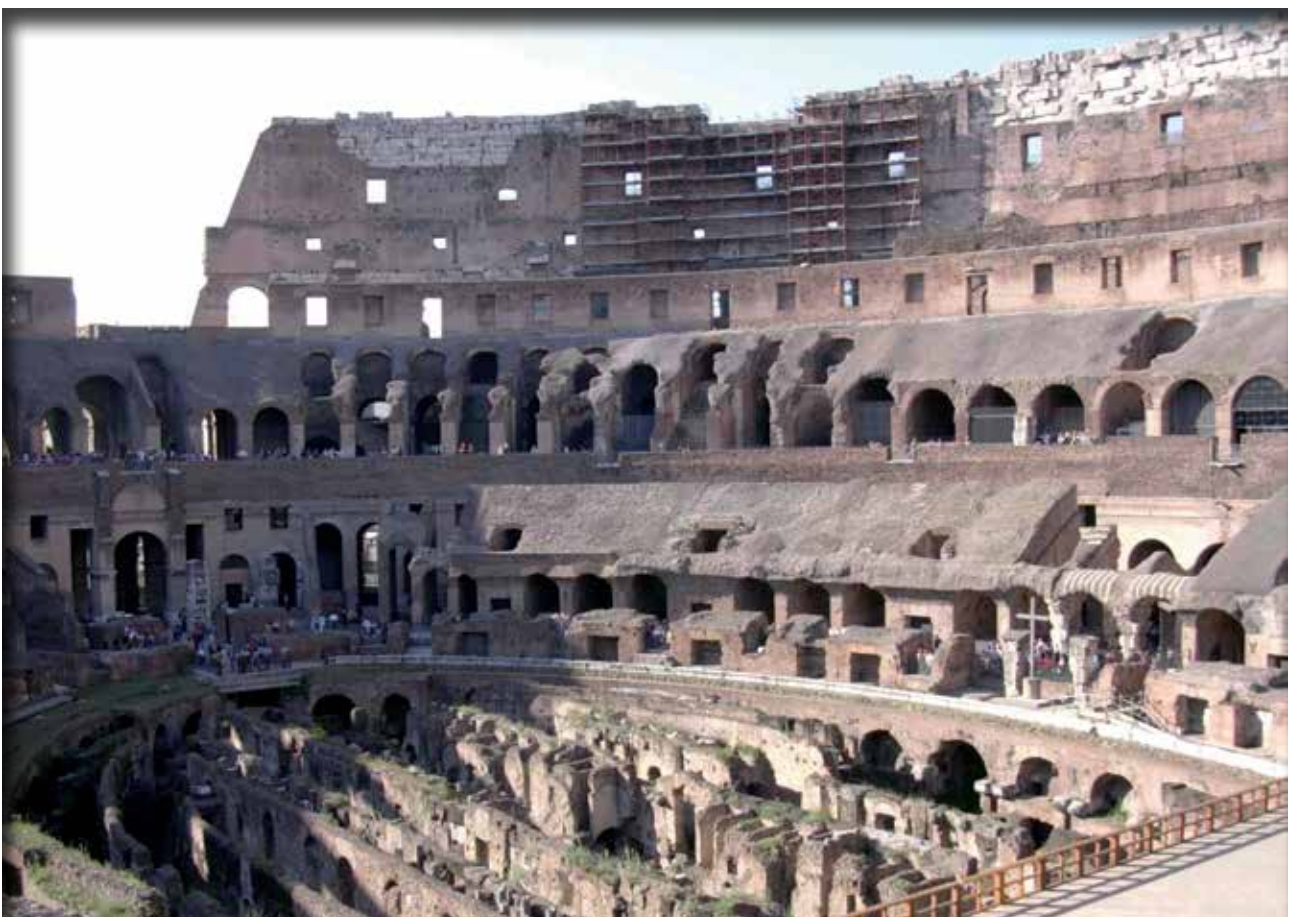
The Egyptians used cement as far back as 2500 BC. Some scholars believe that a cementing material produced from either a lime concrete or burnt gypsum was used in forming the Great Pyramid at Giza. Some archaeologists believe that the ancient Egyptian artists knew how to convert ores⁴ and minerals into a mineral binder⁵ for producing stone artefacts. They believe that many of the Egyptian statues were not carved from rock, but rather were cast in moulds, and are synthetic stone statues. The Egyptians also used a more common form of concrete. The durability of their concrete is evidenced by the fact that concrete columns built by the Egyptians more than 3600 years ago are still standing.

The Greeks on the other hand were using cement by 600 BC, when Greek builders discovered a natural



GLOSSARY

- 1 holes in the ground
- 2 high temperature heating process which causes loss of moisture, reduction or oxidation, and the decomposition of carbonates and other compounds
- 3 broken stone
- 4 rocks from which metals can be obtained
- 5 substance that makes things stick together



pozzolan⁶ that developed hydraulic properties when mixed with lime. It was the Romans, however, who used cement in large amounts, for huge building projects. Early Roman use of cement dates back to around 300 BC. Since that period, the Romans steadily improved their concrete technology, they also gave it its name. The word 'concrete' comes from the Latin *concretus*, meaning 'grown together' or 'compounded'. Roman concrete structures still stand today. Both the Colosseum (completed in 82 AD) and the Pantheon (completed in 128 AD) contain large amounts of concrete. The Basilica of Constantine and the foundations of the Forum buildings also were constructed of concrete.



GLOSSARY

6 a material which, when combined with calcium hydroxide, exhibits cementitious properties

(Adapted from www.geopolymer.org)

READING COMPREHENSION

ACTIVITIES



● Answer the following questions.

- ① Where and when was concrete used for the first time?
- ② How was lime as a building material discovered?
- ③ What is lime exactly?
- ④ Where was concrete first used in Europe?
- ⑤ Which material did the Egyptians use to build pyramids according to some historians?
- ⑥ What kind of concrete did the Greeks use?
- ⑦ Where does the word 'concrete' come from?
- ⑧ What did the Romans use concrete for?

VOCABULARY

● Find in the text the English equivalents of the following Italian words.

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|--------------------|-------|-------------|-------|
| ① Età della pietra | | ⑤ Gesso | |
| ② Calcare | | ⑥ Manufatti | |
| ③ Calcinatura | | ⑦ Statue | |
| ④ Capanne | | ⑧ Colosseo | |