

Antiquity

A. Mesopotamian and Babylonian science

It was Sumerian that first became a written language, around 3300 B.C. This writing was initially used for trade. In Mesopotamia, the writing medium was clay, which came in many forms, including tablets, cylinders and prismatic shapes.

The first traces of mathematics can be found on Babylonian clay tablets. The four basic operations were carried out using tables, and practical problem-solving was carried out using words detailing all the steps involved. Although these methods were impractical to use, they did have the merit of working, and made it possible to solve equations up to the third degree. As in Egypt, there seems to have been no theorization of these algorithms. All that was given were empirically constituted examples, certainly repeated by pupils and scribes. As such, they are an empirical know-how, transmitted as such, and not a rational mathematical science. However, this algebra was not extended, and it was not until the work of Muslim mathematicians that this aspect of mathematics was developed.

Again for the sake of trade, it was necessary to name animals and plants. But they didn't limit themselves to a simple enumeration, they classified them, and this went beyond the simply commercial domain. This is how certain animals and plants came to be classified into "kingdoms" (fish, crustaceans, snakes, birds and quadrupeds).

The Mesopotamians were familiar with many diseases and had remedies for all of them. Medical texts and manuals had even been written, but it would seem that the experience of the doctor was the most important. Remedies, based on plant drugs such as roots and minerals such as salt, went hand in hand with magic. In those days, for example, it was believed that certain plants had to be picked on certain dates and administered a certain number of times (numbers such as 3, 7 and their multiples were highly prized). The recitation of incantations was also part of the remedy. The logical explanation for all this is that, in those days, illnesses were thought to be of divine origin. So, if you wanted to cure the sick, you had to appease the gods.

Geographical maps were also produced, such as that of the city of Nippur (which was even used by archaeologists exploring the remains of the city). A map of the world was even found, with Babylon at the center and distances represented by travel times rather than actual distances.

B. Egyptian science

Its existence and continuity span more than 3,000 years. Egyptian civilization is linked to a unique geographical location, the Nile Valley.

Egyptian engineering was impressively efficient: it took the Egyptians just thirty years to build each of the great pyramids.

Egyptian physicians had an in-depth knowledge of the inside of the human body. One of the earliest descriptions of the human body is given by the Egyptian papyrus of Ebers (1550 B C), which describes the human body as follows through which pipes run. These pipes carry different substances (blood, air, urine, food, etc.....). In this biology, it's the heart that speaks to the different parts of the body via the vessels.

They are skilled in cardiology, gynecology, eye, intestinal and urinary tract medicine. They perform successful operations. They were the most renowned physicians of their time, and were widely called upon, even from abroad. It's no coincidence that Greek physicians, like their mathematician and astronomer colleagues, trained in the House of Life in Alexandria's famous library.

C. Chinese science

Although modern science was born in Europe in the 17th century, many scientific inventions and discoveries were made in China and are now part of our everyday lives.

Examples include blood circulation, attributed to William Harvey; the first law of motion, rediscovered by Isaac Newton; and movable type printing, reinvented by Johannes Gutenberg. China's most important scientists include Shen Kuo (1031-1095) and Zhang Heng (78-139).

The fruits of nearly thirty centuries of Chinese technological and scientific development were transmitted from the East to the West via the Islamic civilization. Since the 1960s, the work of Joseph Needham has enabled the West to gain a better understanding of China's history and scientific development.

D. Indian Sciences

Humanity owes a debt to the Hindus for Arab-Indian numerals, including the zero, and for positional decimal writing, innovations that have now been universally adopted.

They mastered irrational numbers and the square roots of 2 and 3 with several decimal places. They also discovered what is known as the Pythagorean theorem. In chemistry, they did remarkable work in iron smelting. This enabled them to melt large objects such as the iron pillar of Delhi, which is over seven meters high and weighs more than six tons.

In medicine, they discovered that certain illnesses were due to changes in the environment (seasonal changes, poor hygiene, etc.), but they did not attempt to classify diseases. The fundamental treatise of Hindu medicine is Ayurveda. Ayurveda explained that disease is caused by imbalance, and that to heal a patient, harmful elements must be replaced by harmonious ones. Explanations of various surgical procedures are also included.

The ancient Indians coined the term *àyour véda* (= science of long life), which Filliozat suggests translating as "biology", since this term refers to all normal or pathological vital phenomena. The ancient Indians also had more or less empirical biological knowledge of various useful animal species.

E. Greek sciences

The Greek sciences inherited Babylonian knowledge and, directly in Alexandria, Egyptian scientific knowledge. They were organized around the centers of exchange that were the great cities of the Greek colonies, which then surrounded the Mediterranean basin. The Greek sciences were closely linked to philosophical speculation: logic was born of the question of the coherence of discourse. There is no clear dividing line between science and philosophy. Most scientists are both scientists and philosophers, for the simple reason that science is not yet formalized. Like philosophy, it uses only natural language to express itself. It wasn't until Galileo several centuries later that science became formalized, and began to detach itself from philosophy.

The Greeks are considered the founders of mathematics, having invented its very essence: demonstration. Thales is sometimes considered the first philosopher to have the idea of reasoning about mathematical beings in themselves.

The best-known Greek scientists, in chronological order, include Thales, Pythagoras, Hippocrates, Aristotle, Theophrastus, Euclid and Archimedes