

Water control during ancient times

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INTRODUCTION

Tunisia's geographical location and its layout are at the very basis of its complex hydraulic problems. Its northern and eastern sides overlook the Mediterranean sea while its southern limit adjoins the Sahara. Therefore, the country suffers a lack of rains as well as a bad rainfall distribution.

In order to face such a situation, Men have done their utmost since the earliest antiquity to benefit from existing hydraulic resources on the one hand and to work out techniques to reach an optimum use of waters on the other hand.

Water in Punic cities

During the Carthaginian era, Punic cities' houses were systematically equipped with one or more tanks fed through the impluvium made up by terraces. These deep and narrow tanks have, generally, a rectangular section which small sides are rounded, and a surface covered with a resistant and watertight hydraulic mortar. Most of the time, these tanks are earthed and covered with flat panels one of which contains a drawing hole. They may also be bottle shaped presenting an elliptic plane.

Moreover, Punic houses were usually provided with a well as we can see it in Kerkouane and Carthage (which had an important fresh ground water). Underground waters were also collected to feed public fountains. These fountains reached monumental dimensions. Effectively, a fountain was discovered in Carthage and was called "the thousand- amphora fountain" because of its huge size.

It seems that Punics did not use aqueducts, but according to P. Cintas, the terracotta cylinders discovered in Cathage seem to be a part of a ground pipeline. Nonetheless, the irrigation of Tell Errachidia's crops in Lebanon show that Phoenicians were familiar with aqueduct techniques.

Lastly, almost all houses in the Punic city of Kerkouane contain remarkably equipped bathrooms with baths called "hip baths"

The Roman contribution

Spectacular achievements.

With the integration of Tunisia into the Roman empire, the urbanization which was already developed, knew a considerable advance.

Cities in the North made the most of the relatively abundant rainfall and ground water by installing domestic or public tanks, huge fountains, reservoirs and wells to use surface waters or deeper layers.

Whereas small villages made do with these basic facilities, some cities added water collectors which are characterized by their economic aspect. The main structure was usually limited to a rectangular or a semicircular basin for collecting waters which is sometimes dug into the rock or built with rubble stones or building stones. The basin was either an open-air or a structure covered by an arch or slabs and was used not only to collect waters in situ but also as the end of a draining gallery or the final step of a series of parallel or star-shaped drains. The basin was, sometimes, used to feed a small aqueduct built into slabs which are pointed with lime mortar including a regular slope towards the end point.

Larger cities are equipped with wells and tanks, but the demands of a vast population require abundant sources which are looked after far away from the city through important water collectors and huge air or underground aqueducts or combined systems in order to maintain the same slope from the collecting point to the use point.

Carthage aqueduct, built during Hadrian's era in the 2nd century AD, is 132 kilometers long giving, with its impressive arcatures and imposing grottos put up to the level of the collecting point, the best example of these spectacular monuments which provide the Méliane valley with a charm comparable to the sight of the Roman countryside.

Moreover, each city had several thermae some of which reached monumental sizes such as the Antonin thermae in Carthage.

Yet, the scarcity and shortage of water in Central and Southern Tunisia required economy measures to avoid any waste. Therefore, the luxurious comfort of private baths is notably reduced and replaced by public baths which are more modest facilities.

Using all resources and seizing opportunities

The necessity to spare water in those regions highlighted the inhabitants' ingenuity. They deployed an important know-how and seized all opportunities to collect, stock and put this precious resource at the disposal of everybody. In El Jem, for example, waters streaming over slopes during heavy rains are collected in a basin to secure their seepage. A system of successive wells linked through an underground aqueduct makes it possible to transfer waters towards large-size reservoirs when the overfed groundwater level rises.

In pre-Saharan and Saharan areas, a very complex system of dams and dispatchers was developed in order to control oasis' waters and distribute it through a clepsydra. Its Latin name cadus is at the origin of its Arabic name Kadras which refers to the same structure.

A decree was discovered in a Latin inscription in Lamasba- Numidia which remains show that water time quotas were granted to each farmer according to his plot area. Such a system, fundamentally native, had existed before the Roman colonization and is still in force, today, in the pre-Saharan region.

CONCLUSION

Since ancient times, water control has been a major issue in Tunisia. Punics and then Romans made the most of available resources and benefited from existing systems. They left impressive marks of their respective genius.