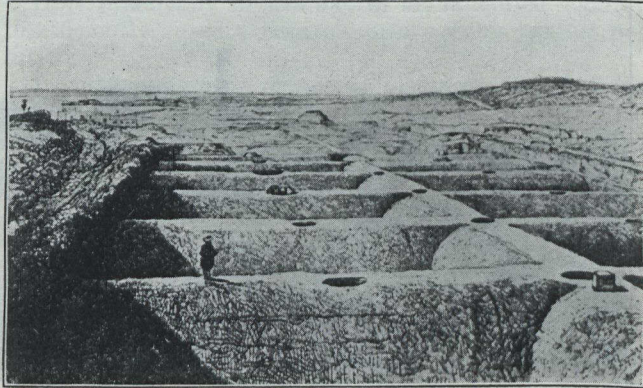


mous; and we cannot but admire their determination to give to the public, regardless of cost, that prime necessity of life and health, abundant and pure drinking water.

Many people have speculated upon the question whether or no the Romans had any knowledge of water purification, and some evidence seems to point to the affirmative. They certainly knew of the benefits of settling tanks or reservoirs, wherein water had time to settle and the supernatant clear portions conducted into towns. This is seen in the great cisterns at Carthage, shown in Figure 5, where the spring water deposited sand and lime which remain to this day.



5—Ancient Cisterns of Carthage.

Another example is the system of settling basins at the head of the aqueduct called Anio Novus, wherein river water, sometimes very muddy, was allowed to settle. This river water was first used for irrigation, but ultimately some of it was employed to eke out the daily supply of spring water.

But whether they knew of the benefits of filtration is somewhat doubtful, though many people are inclined to think that they did. In the museum at Naples is an ancient leaden vessel described as a "Cooling Cistern", shown in Figure 7.

But it is a question whether this really was for the purpose of cooling the water. It hardly could be, because it is made of lead, which would certainly not have any cooling effect. All the people of that age were familiar with the cooling effects produced by placing water in porous earthenware pots. This custom has been in practice amongst Eastern races for countless generations, and one can hardly believe that the Romans were not aware of it.

Another fact which lends more support to the view of these leaden cisterns being used for filtration purposes, is that places exist on the inside for discs of porous earthenware, several of which have been found with such cisterns.

Following the downfall of the Roman Empire, during the Middle Ages, comes a period blank of all progress. However, the destruction of waterworks cannot be attributed entirely to the Barbarians, for several times it is distinctly mentioned in the accounts of the struggles for supremacy between the Romans and the Barbarians that the latter did not wantonly demolish the aqueducts, but only cut off the water supplies until the subjugation of their foes.

Whatever the reasons were, the fact remains that after the fall of the Roman Empire, no attempts were made for many centuries to provide better water supplies in any country in Europe, with the single exception of Spain. And not only was there no progress made in this direction, but what is worse, a form of apathy, regarding the welfare of the waterworks already in ex-

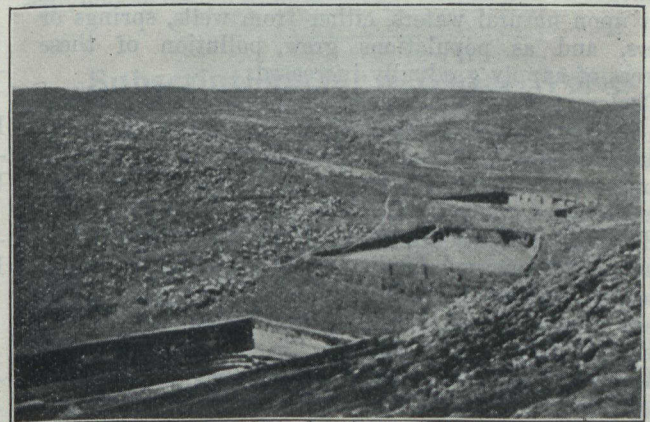
istence, seems to have possessed the people of Europe, and had it not been for the care and vigilance of the Popes of Rome, it is very doubtful whether any vestige of the magnificent works of the Romans would have survived to the present day, but would have gone the way of many others—to absolute ruin.

This colossal neglect on the part of European nations is truly remarkable, and will offer abundant food for thought as to its origin.

The exception in Spain, to which I alluded, is also remarkable, because in this instance the construction of waterworks or aqueducts which took place about the 12th. century A. D., must not be placed to the credit of Europeans, but to the invading Moors. These foreigners to Europe, always considered as being inferior as regards their civilization, showed themselves very much superior in their foresight, and it is to the Moor Jucef Abu Jacob that we owe the splendid aqueduct at Ontivar, which is in use at the present day.

The stagnation of the Middle Ages continued until the 13th. century. We find no records of any improvements until the year 1220, when it is seen that steps were taken both in London and in Paris to better the water supplies of these cities; these were only meagre attempts, effecting nothing in the way of purification, but involving a more copious supply of natural water.

We have seen that in Spain several aqueducts had been erected, and hence the Spaniards were familiar with such things. It is not surprising therefore to find that one of their chief and earliest acts after the conquest of Mexico was the building of aqueducts, one of which exists to-day, and is known as the Zempoala Aqueduct. This was constructed in 1539 by the Spaniards under the direction of a Franciscan monk, named Tembleque. Copies of his specifications are extant, and a quaint reading document it is. The aqueduct supplied the city of Otumba, which was a place of great importance at the time of the conquest, and situated on the far side of the lake from Mexico City, on the way to Vera Cruz. The city of Mexico was supplied by means of aqueducts built by the Mexican kings, and mention of this is made by Cortes several times in his despatches, so that they must have been in existence prior to the advent of the Spaniards.



6—King Solomon's Pools at Etham.

In Peru likewise, according to Prescott, it seems there existed aqueducts, apparently of great age, at the time of the conquest. One in particular, said to be over 400 miles long, was for the conveyance of spring water.

How long the Ancient Mexicans (i. e., Aztecs & Toltecs) and Peruvians (Incas) had been acquainted with aqueducts it is impossible to say, but herein lies material for speculation by those who are interested in the