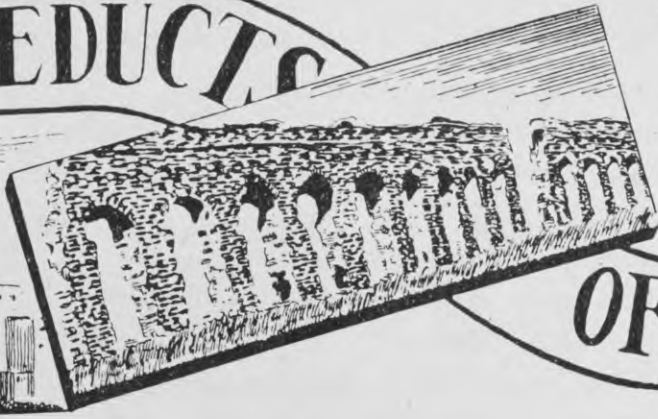


AQUEDUCTS



OF ITALY

BESIDES free "bread and games", the citizens of Rome in the days of the emperors expected baths to be provided by their rulers—also without charge. As the corn for the free bread was ground by water power, the items of bread and baths alone called for a tremendous quantity of water in the city. The need was met by conveying water from various sources, several of them more than fifty miles away, into the city by means of aqueducts, remains of which still exist.

Rome has always been a well-watered city. Even 2,000 years ago the supply *per capita* of water was as generous as that in many modern cities. Historians have estimated that in the first century A.D. the total water delivered by the aqueducts was about 130,000,000 gallons a day.

Before the time of Christ nine aqueducts had been built to bring water to Rome. The first was constructed in 312 B.C. by Appius Claudius Caecus, the constructor of the Appian Way. His aqueduct, known as the *Appia*, formed a covered tunnel for most of the ten miles of its length. The water was drawn from a source to the east of Rome. Subsequent aqueducts brought water from rivers, lakes and springs near the city. The longest, the *Marcia*, was built in 145 B.C., and was fifty-eight and a-half miles in length. An even fall had to be kept in the channels, which were

supported by arches when they crossed valleys and dips in the ground. At one point near the city walls three aqueducts were formed one above the other on the same line of arches.

A great proportion of the length of these aqueducts was covered, and the actual waterway was of masonry. One, built in 127 B.C., included a quantity of concrete in its construction. The shape and size of the conduits varied, some of them being eight feet high and four or five feet wide. A three-mile tunnel through a mountain, carrying water from the Anio River, shortened the route of one of the later aqueducts.

Before the end of the first century A.D., the aqueducts came under the control of Sextus Julius Frontinus. "Will anybody compare the idle Pyramids, or those other useless though much renowned structures of the Greeks with these many indispensable aqueducts?" once said Frontinus, forerunner of the modern Public Works engineer. In Rome's water system, he found that numerous "rackets" were being worked. The aqueducts were being surreptitiously bled en route by owners of adjacent properties. At the city the water was measured into distributing tanks by a few bronze meter orifices of large capacity, and distributed out again by a large number of small orifices to the various purchasers. The watermen, by making the inlet orifices larger than