

EPHESOS (EFES) SU YOLLARI

THE AQUEDUCT OF EPHESOS

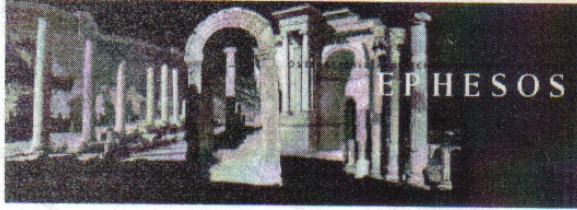
GILBERT WIPLINGER



Gilbert Wiplinger & Mehmet Bildirici in Petra Jordan in 2007

Bu İngilizce özet İnternet'ten alınmıştır. Daha geniş Almanca metin gene Wiplinger'in editörü olan "CURA AQUARUM IN EPHESUS" Cilt 1 sayfa 23-37 (WASSER FÜR EPHESOS" bulunmaktadır. Bu konuda Ünal Öziş ve arkadaşlarının çalışmaları bulunmaktadır. Burada tüm önceki yayınlar göz önüne alınmıştır.

This English text was taken from İnternet. The German text can be seen in the book "CURA AQUARUM IN EWPHESOS" in pages 23-37 (Vol 1) as the "WASSER FÜR EPHESOS". The editor of this valuable book is Wiplinger.



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THE AQUEDUCTS OF EPHESOS

History of Research

At its highpoint in the 2nd century A.D., Ephesos had roughly 250,000 inhabitants; their private residences, six large bathing complexes, many nymphaea, and the public latrines needed to be supplied with enormous amounts of water.

Water is the fundamental criterion not only for the establishment of a city but also for its study and analysis; however, for a long time water was not taken into consideration as an object of archaeological research. So, for example, the Englishman John Turtle Wood, the first great researcher on Ephesian soil, only sought built structures during his quest in the 1860s for the Temple of Artemis, one of the Seven Wonders of the Ancient World; the manner in which the ancient city was supplied with water would for a long time remain unstudied.

Already in 1898, however, in the third year of Austrian excavations, Philipp Forchheimer during a stay in Ephesos rode across the aqueducts which conveyed water from the sources into the city. With his publication of 1923, he took the first important step towards the research of hydraulics in the metropolis of the Roman province of Asia. Then the water supply of the city fell back into obscurity again, even though at precisely the period between the two World Wars and in the 1950's, all the major bathing complexes and nymphaea were excavated. Research carried out in the 1970s in the form of a diploma at the University of Izmir, and work by Ünal Özis (Izmir) brought above all the spectacular structures of the aqueduct bridges back to the centre of interest; their only partially good state of preservation, however, hindered an investigation of their inflow and outflow. The recent endeavours of Dora Cröuch and Charles Orloff (USA), who attempt to obtain a new, unique picture of the Ephesian water supply without knowledge of Forchheimer's research, have set up, using computer-aided model, a calculation of the speed of the water flow, and thereby go into great detail.

State of Research

Since 2001, Gilbert Wiplinger and a team of researchers have been concentrating on the Ephesian long-distance aqueducts. In 2004, the twelfth international symposium, "Cura Aquarum in Ephesos" took place, in order to create an international basis for discussion of the analysis of the Ephesian aqueducts. During the years 2001, 2003 and 2005, the goal of the on-site analysis was the confirmation of the preserved existence of all aqueducts based on previous publications. During this work, it was possible to discover an entire series of previously unknown sections of pipes, aqueduct bridges, tunnels, feed pipes, and even two hitherto unknown aqueducts; this has now resulted in a completely new and vastly more complex picture of the aqueducts of Ephesos.

The Lysimachan Aqueduct

The earliest aqueduct, only discovered in 2005, in the first half of the 3rd century B.C. supplied the city, established by King Lysimachos between the two city hills, with water presumably coming from a source not far outside the city. A single course of terracotta pipes was laid on berms and directed into the city area through an opening provided in



the city wall.

The Aqua Throessitica and the Aqueduct of Pollio

The Aqua Throessitica was probably established during the 2nd century B.C.; this chiefly supplied the greater city by means of two courses of terracotta pipes laid on berms. In the course of succeeding centuries, additional courses of pipe on new berms were added to this, so that it has been possible to date to identify at one single location a total of seven courses of pipe.

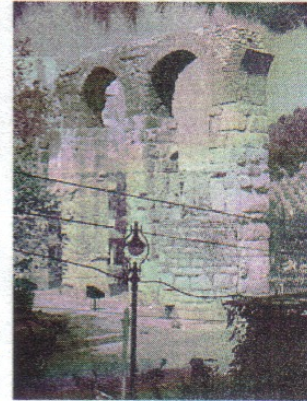
One of these courses was added on during the Augustan period, when C. Sextilius Pollio accessed a water source on the slope lying opposite, and caused it to flow into the Aqua Throessitica over a particularly monumental aqueduct bridge constructed by him and running across the road leading to Magnesia. This aqueduct had attained a total length of 8 km. and was carried into the city over six bridges.

Şirince Aqueduct

An additional aqueduct, which may be Hellenistic but is at least certainly Roman in date, is the Şirince Aqueduct; this runs into the city from the east over a distance of 6 km. and with numerous terracotta pipe courses. To date, the most well-known remains from this early period are the installation at the water source and an aqueduct bridge in the Beylikici valley.

In the 6th century A.D. this same alignment was used for a new conduit, which passed into a stone pressure pipe conduit at its terminus, and which supplied the settlement which had grown up around the Justinianic Basilica of St. John with water. The 656 m. long bridge over the valley, with its 125 pilasters, impressively crosses the modern city centre of Selçuk.

During the Selçuk period, the Şirince Aqueduct was again used to supply the Isa Bey Mosque and its environs with water; however, the two terracotta pipe courses were not carried over the large aqueduct bridges, but instead along the ground on their south side, and over the so-called Suterasi towers, in order to reduce air in the pipes and to reduce pressure.



Sultaniye Aqueduct

The remains of a spring installation in the village of Sultaniye, a three-storied aqueduct bridge in the Bahçecikboğaz valley, together with fragments of terracotta pipes are evidence of an additional Hellenistic or early Roman aqueduct. It is not yet clear, however, whether this conduit supplied one of the two coastal towns, Neapolis or Phygela, with water, or whether it represents a precursor to the Değirmendere Aqueduct, one which was completely dismantled in favour of the more recent aqueduct.

Aristion Aqueduct

During the heyday of Ephesos at the beginning of the 2nd century A.D., when many of the large baths and nymphaea were erected, the city's water requirement increased dramatically. Therefore, Claudius Aristion erected a



210-stadia long aqueduct which ran from the north-east out of the Caystros valley towards the city. This took the form of a vaulted water conduit, set into an artificially-created rock channel, and which ran immediately behind the Mausoleum of Belevi and then across eight aqueduct bridges known to date and finally into

the city. Beneath the steps of the Stadium and of the Theatre, the Aristion Aqueduct made for its final destination, the Nymphaeum Traiani. The overflow from the water basin in front of the Nymphaeum was directed to the cliff slope opposite, flowed underground beneath both the Terrace Houses 1 and 2, and presumably ended up at the harbour, where a large water supply was required for industrial purposes. In the immediate vicinity of the Mausoleum of Belevi, it was necessary to repair the aqueduct in the second half of the 3rd century A.D., as it had been damaged by collapsing parts. These repairs demonstrate that the aqueduct remained in use at least up until this time.

Değirmendere Aqueduct

The youngest independent aqueduct, and also the longest, ran towards the city from the south in a great curve over a distance of ca. 43 km.; it was probably built in the mid-2nd century A.D. Since its ancient name is still not known, this aqueduct is called after the modern name of the valley where the water source is located, the Değirmendere. This again takes the form of a vaulted water channel with the enormous cross-section of ca. 0.70 × 2.35 m., carried over 20 aqueduct bridges and through two tunnels on the rear side of the large city hill, and finally arriving at the city in the area of one of the towers of the Lysimachan city wall. In contrast to the Aristion Aqueduct, here the rock was only worked as much as was absolutely necessary in order to obtain a minimum bearing. In order, however, to be able to erect the conduit in what is in places extremely steep land, massive supporting walls with buttressing constructions were necessary. Over a stretch of about 8 km., a second water course existed, whose aqueduct bridges (a total of eight in this "double" section) were built directly adjacent to each other; while between the bridges the older conduit was generally built over by the newer conduit. Furthermore, this aqueduct possesses a feeder conduit, which is carried across an additional aqueduct bridge.



Until up to about twenty years ago, the first third of the Değirmendere aqueduct was used to supply water to Kuşadası, with the result that there is a particularly large number of repairs in this section: for example, the Başkemer aqueduct bridge was faced with small rubble stones during the Ottoman period, so that the heavily weathered Roman construction is now very difficult to identify. Iron supports, which carried a wooden channel in place of the two collapsed central arches, originate first to the 20th century. Moreover, in a new city area of Kuşadası, an Ottoman aqueduct bridge with 24 arcuated openings is preserved in its entirety; the conduit for the water supply to the Caravanserai ran over this bridge.

Future Outlook

This work has delivered, in a first step, an overview of the Ephesian aqueducts; now research needs to go into more detail in order to obtain a better understanding of the aqueducts as complete structures. Over the coming years we therefore plan to study in detail, and taking into consideration all of its aspects, the longest aqueduct, and the most complicated in terms of construction, namely, the Değirmendere Aqueduct.

Picture Captions

Fig. 1: Aqueduct Bridge of C. Sextilius Pollio (© OeAI)

Fig. 2: Pillars 70-73 of the Selçuk Aqueduct bridge, with Suterasi (© OeAI)

Fig. 3: Cingene aqueduct bridge of the Aristion Aqueduct (© OeAI)

Fig. 4: Channel of the later Değirmendere Aqueduct (© OeAI)

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EKLEMELER - ADDITION



Efes'te yapılan toplantıdan bir görünüş 2004
Cura Aquarum in Ephesos in 2004



Efes Celsius kitaplığı önünde kokteyl, Efes kıyafetli genç bir kız ile, 2004
A girl with Ephesian wear at the cocktail in front of Celsius Library, 2004



Efes Cura Aquarum toplantında Paulette & Jean Burdy ile, 2004
At the Cura Aquarum meeting with Paulette & Jean Burdy 2004