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## **Construction and Restoration of The Waterlines of City Medina in Ottoman Period**

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### **Abstract**

Medina, one of the most sacred places of the Hejaz region, is seen to have not experienced serious water shortages throughout history. Ayn al-Zarka, one of the most important water springs, and other water reserves meet most of Medina's needs.

The local governments and the Ottoman central government took serious interest in the water issues of the region (especially in Medina), which had been under Ottoman rule for a long time and took the necessary measures. Repair and maintenance of the waterlines, which had deteriorated over time, were closely dealt with, and large-budget cost expenditures were compensated for by the central treasury and/or the Egyptian treasury.

Additional water sources were sought to eliminate the water shortages caused by population increases and drought; this was attempted with respect to the periodic needs. The holy places that got particularly crowded during the Hajj season were seen to face water shortages. In recent times, distilling seawater has been attempted as a solution to eliminate this shortage.

**Keywords:** Medina, Ayn al-Zarka, water conduits, Restoration, Yanbu, Hajj.

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## Introduction

According to religious texts, the Hejaz region has been prominent from the first human, Adam (pbuh), until today through its sacred identity and retains its quality as the oldest residential area. This geography attracted attention in the religious sense and has pioneered religious tourism since ancient times. This interest increases with each passing day. The governments that have dominated these regions respect these locations and make efforts to develop them.

The cities of Mecca and Medina, located in the Hejaz region and called al-Haramain [the two sacred sanctuaries], have vital importance particularly for Islam. The city of Medina (whose pre-Islamic name had been Yathrib), which importantly is where the esteemed Prophet and founder of the religion of Islam established the Islamic state by migrating and is where his own grave is found, has always had the quality of being a place throughout the course of its history where almost all Muslim dynasties have felt the honor of serving. By rejecting the expression Hakim al-Haramain [Ruler of the two sacred sanctuaries] when the Ottoman Empire took over this place's administration from the Mamluk State, the term Hadim al-Haramain [Servant of the two sacred sanctuaries] was used and like in other Islamic states, they considered themselves the servants of these holy places.

Since Sultan Selim I, both local administrators and the central government each time have taken the necessary precautions against the problems that might arise with the arrival of pilgrims from all over the world to these holy lands where pilgrimage requirements were practiced and also to where treasures were shipped with the Surre Regiment (the caravan carrying the Sultan's donations [i.e., Surre fund] from the palace to the holy lands).

The Hejaz region is known to be a barren area. No flowing rivers are found in this area (Elkabashi, 2006, p. 130).

In this context I have laid out in detail in my study that water is the greatest problem the city of Mecca faces (Tekin, 2005, pp. 22-66)

Correspondingly, the city of Medina is seen to be at a better level compared to Mecca regarding the issue of water.

The water flows of Medina start from the south and flow northward. These waters, which come together near Zagaba (in Cameroon), flow toward the coast by turning west along al-Aqiq Valley. The main source that feeds these waters is rainwater. These waters cause an increase in underground water reserves, even the al-Munaha flats turn into a lake after heavy rain, creating a flood threat for the settlement in the south section of the city. A levee was constructed in the time of Caliph Uthman in order to eliminate the danger. Because most of the water is salty, it is not potable. For this reason, the governors of the city have been busy building aqueducts to carry freshwater resources found in the city's south valleys into the city (Provençal, 1978, p. 459)

Medina's water is supplied from wells located both inside and outside the city. These wells can be said to be Medina's most important sources of water. The water that comes from these wells is used for the needs of the townspeople as well as of the agricultural areas. A portion of these wells appear to belong to the time of the Prophet (pbuh) (Elkabashi, 2006, p. 138)

From the records in historical books, one can learn that much agriculture and protection had been done with the abundance of wells that were available in Medina during the time of the Prophet and his companions and in later periods. In the time of Muawiyah I in particular, water flows were understood to be excessive, and Muawiyah I himself showed interest in agriculture. Each year in Medina, 160,000 camel loads of wheat and barley and 150,000 camel loads of dates appear to have been harvested. Information obtained again from the same text shows some wells to have been

destroyed and others to have been demolished and closed with the periodic changes later on (BOA, Hatt-ı Humayun, nr: 2745).

Elkabashi, who examined ancient sources regarding water springs, arrived at significant findings regarding water springs and wells. Elkabashi provided information about the following wells:

***Bi'r Ha' [Ha' Well]***: This well is located in the middle of a small garden near Al-Baqi' cemetery. The Ha' Well, located in the north rampart, belongs to some of the people of Medina. The water is potable. The well measures 20 cubits by 3 cubits and is filled to a depth of 11.5 cubits.

***Bi'r al-Aris [Aris Well]***: This well is found in the largest garden of the sharifs and belonged to Husayn ibn Ali. A stairway to this well, located west of Quba Mosque, was built by Sheikh Sayf ad-Din Abu Bakr bin Ahmad as-Salam in 714 AH/1314 AD. The well water is potable. The well is 14 x 5 cubits and a depth of 2.5 cubits.

***Bi'r Buda'a [Buda'a Well]***: This well is to the west of Hâ well and is located within a garden on the north rampart. The well belongs to the Bani Sa'de and is subject to the Khazraj tribe. This well, which has potable water, measures 11 x 6 cubits and the water is 2 cubits deep.

***Bi'r al-Ghars [Al-Ghars Well]***: This well is located to the east of Quba Mosque. Despite the water being green, it is potable. The well measures 7 x 10 cubits, and the water has a depth of 2 cubits.

***Bi'r al-Bussa [Al-Bussa Well]***: The well, located in a garden, is close to Al-Baqi' cemetery. This garden was dedicated to the poor and to travelers by Rayhan al-Badri in 1297-1298 AH. The freshwater well measures 11 x 9 cubits, and the water has a depth of 2 cubits (Elkabashi, 2006, p. 139)

***Bi'r Uthman [The Well of Uthman (also known as Rumah Well)]***: The well belongs to a member of the Bani Gifar tribe. Caliph Uthman bin Affan bought this well for 35,000 dirhams. This well is found to the north of Masjid al-Qiblatayn. This freshwater well measures 18 x 8 cubits, and the water has a depth of 2 cubits.

In addition to these, Awliya Chalabi provided information about the wells of 'Urwah ibn al-Zubayr and Ali ibn Abi Talib. He provided the following information about 'Urwah ibn al-Zubayr: "A well is found within the vineyards of Medina called the Well of 'Urwah ibn al-Zubayr. The man who drinks it gains weight. The Kuza well is also close to here. They say it was dug by Prophet Abraham. Prophet Muhammad also took ablution from this well. There is water within the palm vineyard of the Prophet. Women drink it. It has 70 qualities. The women also have all of these qualities. All the girls and women bath in this pool. Because of this, they say this vineyard of the Prophet is the vineyard of women. Men don't come to this vineyard."

Awliya Chalabi mentioned the following about the well of Ali ibn Abi Talib: "In the fall, Ali dug a wide well akin to a garden well near the slopes. The water is drawn by waterwheels, and it has great pools around it. So many pilgrims bathe, get out, wear their ihram clothes, and drink from this water" (Evliya Çelebi, 1971, p. 237)

Although the pre-Ottoman city of Medina had many water springs, the most important of these is *Ayn az-Zarka* [Azure Spring]. Taking a closer look at the structure of *Ayn az-Zarka*, which has many wells and water springs connected to it and provides the city's main water supply, would be beneficial.

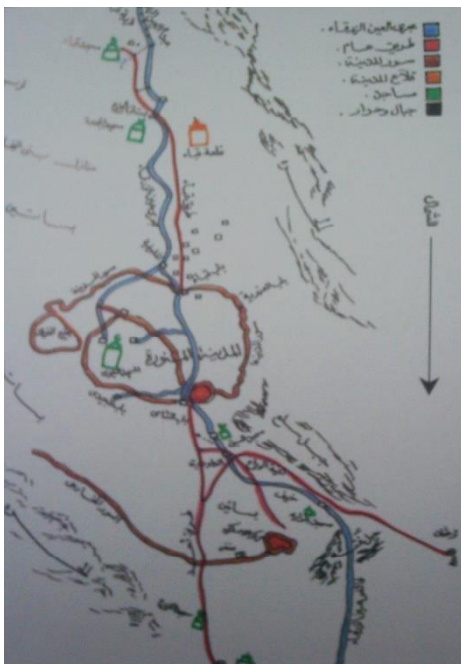
### **The Waterlines of *Ayn az-Zarka***

***Ayn al-Azrak Nafura [Ayn al-Azrak Fountain Spring]***: In the early days of Islam, Medina's water needs were met by the following famous freshwater wells. Medina had the famous wells of *Bi'r al-Suqya*, *Bi'r al-Aris*, *Bi'r Buda'a*, *Bi'r Uthman*, *Bi'r al-Gars*, and *Bi'r Al-Bassa*.

As the need for water increased during the time of the Umayyads, the waterflow from *Ayn az-Zarka* was considered one of the most important services of the Umayyads. (Aydın, 2007, p. 119) It is

Medina's most important source of water. It is known as the *Ayn az-Zarka* [Azure Spring] among locals. This spring was built in 662-663 AD by Marwan bin al-Hakam, who had been appointed governor to Medina during the time of Muawiyah I. The spring's name is a reference to Marwan's blue eyes. During the Ayubid Dynasty, a stream was separated from the *Ayn az-Zarka* that went to the Al-Salam Gate, the main gate of *Al-Haram al-Nabawi* [The Prophet's Mosque]. A public fountain was built there. The people of Medina drank the water from this fountain. Because *Ayn az-Zarka* is a very large spring, some authors have described it as a river. (Elkabashi, 2006, p. 140)

The water of *Ayn az-Zarka* is transported by clay pipes that travel south to north. They separate into two branches within the city, one passing near Quba Mosque then going through the middle of Al-Jum'ah Mosque and Quba Castle and ending near Mosque of Al-Ghamama; the other branch passes through the Bab ul-Quba gate and also splits into two, one ending at the Bab al-Salam bathhouse and the other extending from the Bab al-Salam gate and continuing upon the Al-Uyun Road. (Aydın, 2007, p. 122).



***Ayn az-Zarka* Waterways Map (From the thesis by S. Aydın)**

The people who worked on the *Ayn az-Zarka* waterways were called *Aynü'l- Zerka kulları* [the servants of *Ayn az-Zarka*] according to Ottoman sources. According to what was learned in the Surre notebooks, their number varied from year to year. In fact, while the number of workers in 1589-1590 AD had been 12, this number reached 20 in 1595-1596. The variability of this number changed based on the scarcity or abundance of the maintenance, repair, and cleaning jobs that occurred in the waterways.

A custodian was in charge of the servants of *Ayn az-Zark*. In the sources, this custodian was referred to as *Nazirül-Ayn* [Minister of the Ayn]. At the end of the 16<sup>th</sup> century, one minister with the name Yusuf bin Hızır has been identified.

A certain amount of the Surre fund was allocated each year to the people servicing the *Ayn az-Zark*. The allowance amount made from the Surre fund in 1595-1596 was 64 coins. However, this money was seen to not be distributed equally among everyone (Elkabashi, 2006, pp. 140-41).

Compared to Mecca, Medina was in quite a good position in terms of water abundance. Water problems did appear from time to time in Median due to various reasons in connection to the arrival of the Hajj season. The source for eliminating these types of problems was mentioned as the water

from a large well named *Ayn az-Zark* found in the Caferiye Garden on the west side of the Quba Mosque that arrived at Medina through water conduits (Altınöz & Demirlikan, 2008, p. 19).

When coming to Ottoman times, the water from *Ayn az-Zark* located in Medina is observed to have sufficiently met the needs of the people as it generally had in the past, and the surplus water was seen to have been used in irrigating the people's agricultural products such as vineyards, gardens, and orchards. In fact, because of this, the public even made requests to funnel the excess water outside Medina to the Zeki Garden (Altınöz & Demirlikan, 2008, p. 19). In this context, an early historical document in the Mühimme book also includes rather interesting information. Accordingly, with respect to what is understood from a letter sent to Istanbul from a Medina *qadi* [judge] and the Sheikh of al-Haram, Medina's *Ayn az-Zarka* River being consumed in the gardens that were formed in high places apart from Lake Karye had caused the water forefront to shut down. In this case and as a result of the accumulation of the water, whose forefront had been shut down, in the place called *Seyyit Zeki* close to Medina Castle, more than 15,000 feet of water was reported would return. If the height of this garden did not drop by one or two cubits, in case the *Ayn az-Zarka* water that had accumulated for a few years returns, this was determined would damage the waterway, and repairing this destruction would not be possible with thousands of florins. In the decree sent from Istanbul regarding this, preventing the harm that might be caused by lowering the elevation was requested from the Medina *qadi* and the Sheikh of al-Haram by taking an amount of space from the owners of the gardens that had subsequently formed (BOA, Mühimme Defteri, no:7, p. 483, hk:1397).

Because the *Ayn az-Zarka* is the main water source for the city of Medina, the state attached great importance to the supply of this water to the city. During the period of Suleiman the Magnificent and Selim II, the waters of Medina were taken care of and many water sources were added to *Ayn az-Zarka's* water (Kurşun, 2017, p. 306).

In fact, we see that speed had been given to the activities of widening and cleaning the outlet source and conduits of *Ayn az-Zarka's* water during the time of Suleiman the Magnificent. These waters were broadened with supplements in his time. At the end of Suleiman the Magnificent's reign, Mecca and Medina were provided with plenty of water through the Hejaz aqueducts at the end of the work that continued for 8 years after great effort and expenditure, and the troubles had been eliminated (Aydın, 2007, p. 120).

We see that the Sokollu Mehmed Pasha had commissioned Seyyit Ahmet, the *Naqib al-Ashraf* [caretaker of the Prophet's noble heritage] in Medina, to clean the water channel in 980 AH/1572 AD. In addition to performing the necessary repairs, Seyyit Ahmet added to the *Ayn az-Zarka* by purchasing the Nabi and Hatima wells found within the borders of Quba and also expanded the conduits of the surplus water. (Altınöz & Demirlikan, 2008, p. 19) Additionally, the available water was distributed to various parts of the city, reaching the Islamic monasteries where the poor resided. A Turkish bath was also built next to the Haseki Sultan Madrasa, the last place the water reached. (Güler, 2003, p. 474.)

Patents were stated to be given from Istanbul in the decree that was written to the *Qadi* of the Enlightened City of Medina on October 3, 1567 AD (Rabil 29, 975 AH) because some of the water maintainers that Mehmed Pasha had taken to his side had informed him of the need for some fountains (BOA Mühimme Defteri, nr: 7, hk:774).

In the decree written to the governor of Egypt date Rajab 12, 975 AH/January 12, 1568 AD, the Sokollu Mehmed Pasha ordered the materials needed for this aqueduct to arrive in place, commanding the necessary supplies for the water that would be sent to the Enlightened City of Medina to be paid for with silver coin. (BOA Mühimme Defteri, nr: 7, p. 257, hk:720) From the decree sent three days later written to the Medina *qadi* and the Sheikh of al-Haram on Rajab 15, 975 AH/January 15, 1568 AD, we

learn that a bowl of wheat had been assigned from the produce sent from Egypt to the water maintainer who had been tasked with *Ayn az-Zarka* (BOA Mühimme Defteri, nr: 7, p. 256, hk: 715).

In the decree sent to the Medina *qadi* from the government center on Rajab 21, 975 AH/January 21, 1568 regarding Sokollu Mehmed Pasha's request to construct a water fountain that he sent to Medina, the order came requiring a bountiful crop for the *meshruta* [mortmain property] that would be constructed in a place near the Grave of the Prophet to accommodate the people who set out from Baghdad, especially the pilgrims, and to act in accordance to this (BOA Mühimme Defteri, nr: 7, p. 256, hk: 716). Thus, both the permission for the construction of the fountain that Sokollu Mehmed Pasha planned to have made had had been received as well as the recommendation that this fountain be established around the *meshruta* near the Grave of the Prophet.

Talking about the good results of this incident while mentioning in his travel guide the garden fed by two wells and named Sokollu Garden, Awliya Chalabi in fact made magnificent descriptions saying, "With the garden's ornamental pavilion and banquet halls, it is a garden worth beholding akin to the Garden of Paradise, the beholder's heart opens up. Its water comes from the well above. The magnificent pavilions are decorated with wild red roses." (Çelebi, 1971, p. 237).

Information is available regarding a fountain built in 1580 AD by Murad III. 2,000 florins is seen as the amount estimated for being able to make this fountain. This money was covered by the Egyptian treasury. Payment for the daily wage of seven coins for the two water maintainers appointed for the fountain was again covered by the Egyptian treasury (Elkabashi, 2006, p. 83).

In 993 AH/1584-1585 AD, a new fountain was seen to have been built in Medina. From the grain money, 914 gold coins were allocated for this fountain. This fountain is understood to have been different from the others. In addition to these, information has been accessed regarding the construction of another fountain in 999 AH/1590-1591 AD by Mehmed III. (Elkabashi, 2006, p. 84).

According to what Elkabashi stated, the number of fountains in Medina between 1590-1598 is shown to be nine on the list contained in Surre Notebook #1516 in the Topkapı Palace Museum Archive and these fountains are listed as follows:

- *Sebil-i Humayun* [The Fountain of Humayun]: The fountain built in the time of Mura III and attributed to the sultan.
- *Davut Paşa sebilleri* [The Fountains of Kara Davud Pasha]: These are three fountains the Davud Pasha, one of the 17<sup>th</sup>-century Ottoman Viziers had built in Medina; the first is near Medina, the second is near the Quba Mosque, and the third is within the Medina ramparts.
- *Lala Mustafa Paşa Sebili* [The Fountain of Lala Mustafa Pasha]
- *Mısır Defterdarı İbrahim Bey Sebili* [The Fountain of Egyptian Treasurer İbrahim Bey]: This fountain is within Medina.
- *Şeyhü'l-harem Mustafa Bey Sebili* [The Fountain of Sheikh al-Haram Mustafa Bey]: This fountain is close to Musallah. It is understood to have been created in 1584-1585 AD at the order of Murad III.
- *Lala İbrahim Paşa Sebili* [The Fountain of Lala İbrahim Pasha]: This fountain is near the castle.
- *Mısır Defterdarı Kasım Bey Sebili* [The Fountain of Egyptian Treasurer Kasım Bey]: This fountain is in the place known as Mesjid Suqya (Elkabashi, 2006, pp. 84-85).

We see that efforts were made to build fountains in the places felt necessary in Medina. In fact, in an order written to the Medina *Qadi* in 1580, the construction of a fountain in front of the Prophet's Mosque was ordered. Edicts dated 1586 and 1593 show the existence of commands regarding this and that some things had been done about it (Kurşun, 2007, p. 306).

When the people of Medina complained about the lack of water in the time of Murat III, a fountain was built near *Bab al-Misri* [Egyptian Gate]; 60 coins daily and 50 erdeb. (750 bushels) (Erdeb: 1.000 Oke. It is a unit of measure used in some Arabian territories. (Ş. Sami, *Kamus-ı Türkî*, p. 88)) of wheat annually were allocated to those in service for this. Each day, transporting water from these fountains to the people who were thirsty by means of water bearers was stipulated. (Altınöz & Demirlikan, 2008, p. 19) We have learned from the sources of the era that 10-20 officials were employed between 1590-1596 in cleaning the water channels and the work maintaining continuous flow of water to the city, that a minister was in charge of these employees, and that all these employees received a share of the Surre donations that were sent to Medina each year. (Kurşun, 2007, p. 306) In 1591 under the same sultan, the water shortage in Medina was completely eliminated by adding the water from *Bir Ali Miqrat* [Well of Ali at the pilgrimage boundary], which had 10 times more water than the previous source, to the *Ayn az-Zarka*. (Altınöz & Demirlikan, 2008, p. 19)

Due to the lack of what had normally been a water problem in the city of Medina, the excess water was used for agricultural irrigation. Over time, however, it started to also be used in architectural structures. We observe decrees to have been written from time to time on the issue of not providing the water from *Ayn az-Zarka* to the gardens and bath houses due to the increases in temporary water shortages that began in Medina based on changing conditions. (Altınöz & Demirlikan, 2008, p. 19)

We find detailed information about the water wells of Medina on the *Shukka* [parchment] that Jeddah Governor Yusuf Pasha sent to Istanbul in Shaban 1214 AH/1799 AD. This report gave information about the aforementioned wells, stating which ones were wrecked, which had dried up, which ones were closed, and which ones still had water. Yusuf Pasha's report indicated the location of water wells and revealed information that stated current conditions at the time about some wells that had been inactive and closed regarding which tribes had reactivated or reopened them by digging again. (BOA, Hatt-ı Humayun Tasnifi, nr: 1745)

The *Ayn al-Wadi* well located where Hamza had been martyred had been closed up to now; meanwhile the *Âl-i Havâzin* Tribe, a Bedouin Arab tribe, had endeavored to repair the well and draw out its water, seeing signs of its revival. They extracted water that would turn a mill and it still flows. (BOA, Hatt-ı Humayun Tasnifi, nr: 1745)

A man by the name of Dervish al-Zura from the Camel Herders who had left the Harp Tribe began to repair the well next to this one in the same way; they have extracted water that will turn a mill and it still flows. (BOA, Hatt-ı Humayun Tasnifi, nr: 1745)

Apart from these wells are two other wells known as **al-Shuhada Well** next to Mount Uhud and in line with one another; their location is suitable for agriculture. A person named Sheikh Awda from the Ali Haydar Tribe, a Bedouin Arab tribe, began to repair one of the wells with some of his friends; a man named Sheikh Iwaz from the Ali Zahir Tribe began the repair of the other well with his friends. They each drew water from their wells that will turn a mill. They are still flowing (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

The person named al-Sheikh Musa bin Bashat, located at the head of the Ziraat-I Numaye and from the Bedouin tribe Banu Amir Kabile, similarly began repair of the well known the **Well of Muawiyah** near the al-Shuhada Well with some of his friends; water that will turn a mill has been drawn and presented for benefit by planting 500 bushels of wheat, barley, and some vegetables (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

Three other wells known collectively as the **Hussein Wells** are available around Medina; they have been named individually as the **Muzayyak Well**, the **Merve Well**, and the **Saqiyya Well**. They are still operating (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

While digging a ditch in the Trench Campaign, fresh water emerged from the ground where the Prophet had dug with his own hand, because this water got interrupted, water from *Ayn az-Zarka* was poured into its channel (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

One well known as **Hayf Well** had even flowed by Quba and irrigated the cultivated gardens found at the level of the Four Masjids near Hendek. This well, whose water hasn't flowed for a long time, is currently not in use (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

The water well known as **Ayn Tahnis**, which was constructed by Husayn ibn Ali and sold to pay off a debt of 70,000 dinars upon his martyrdom, is currently blocked (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

The **Well of Ibn-i Zayd**, which is found at the location known as Malal near Zu al-Khalika, is closed at the moment due to an abundance of wind (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

The **Well of Abu Ziyad** on the edge of Gabah has also been abandoned for a long time.

The well known as **Ayn Ibrahim**, located in a place called al-Jurf an hour's distance from Medina, is also abandoned (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

The well called **Fevarin** is found in the place called al-Azem, which is where the brick kilns used to be. This well has also been abandoned (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

Another well found in the area called al-Azem is the **Jadid Well**. This is also abandoned.

A great well-known well called **Ayn az-Zark** is present; it has enough water for both within and outside of Medina, and even more to irrigate the gardens and plantations of Burke village. Of the conduits that had been damaged before this, these have been repaired by the order and generosity of the sultan; the flowing water that has been developed in each place continues to still flow day and night (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

This much could be determined about water from the history books. However, according to one rumor, there are 40 wells, according to another, there are 70; it's been predicted by people in the know that if these wells are unearthed, Medina and its surroundings will become prosperous (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

Four of these wells have been uncovered, and indications are seen that five will also be uncovered in the near future. When the water from the wells uncovered previously in the case of the excavations and repairs the Bedouin Arabs carried out are distributed to the fields, no doubt within a few years Medina will be prosperous with vineyards, gardens, and grain agriculture. In addition, the report Yusuf Pasha submitted to the *Sadarat* [chairmanship] expressed that, in the case of the lands being rehabilitated and agriculture being performed, stated that incalculable products would be obtained, such as in the time of Caliph Muawiyah I. (Ibid) The report additionally contains the following strategic statements: "Even if the roads to Egypt shut down due to the invasion of the infidels, the products grown in Medina will be able to meet the need. The emergence of these wells has also been good for the people of Medina" (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

The order dated Muharram 7, 1147 AH/November 4, 1734 AD sent from the head office regarding the deterioration of some sacred places and waterways within Medina and some of the water wells called *harata*, stating fresh water to be the substance of life for the people of Medina, emphasized the need to eliminate the people's problems by repairing them as soon as possible in contrast to the other places to be repaired. The Governor of Jeddah Abu Bakir Pasha considered the task of appointing an experienced person to ensure that the water does not smell bad and is soundly maintained to be appropriate. (BOA, Cevdet Belediye, nr: 1147) On that date, al-Hatch Mehmet Agha, the Sheik al-



Haram, recorded the locations to be explored and the costs for this in the notebooks where he made decrees and presented these to the main office. According to this, the total costs for the repair of water channels and other places would be 28 Egyptian *kese* [money bags] worth of 22,480 paras (unit of currency in the Ottoman Empire where 3 *akçe* [silver coin] = 1 para) (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

The places expected to be repaired were counted individually on the notebook Mehmet Agha prepared. These places were the water channels flowing toward Medina, 19,000 cubits of which had been destroyed (from the Green Dome to *Ayn al-Zakiyya* and from *Ayn al-Zakiyya* to *burqe* that is as far as the end of the conduit, and from *Ayn Munaha* to *Ayn al-Sawk* and *Ayn Saha*) and similarly from the water wells called the *Harata*, even the 13 *harata* on the Green Dome path had even been destroyed on the upper side of the road from going from Mescid Quba to Medina between Medina and Burke had been demolished; some of these needed repair and maintenance, others needed rehabilitation and renovation (BOA, Hatt-ı Humayun Tasnifi, nr: 1745). Furthermore, 13 arches and minarets from the Prophet's Mosque, its eastern and Sham vicinities, the surface of the Prophet's tomb; some places from Al-Sharif Mosque and Sulaymaniyah to Shiktaliyah; and lastly the wall on the east side of Haram Sharif that had been devastated over time were determined to be in need of repair and maintenance (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

With the above points being offered to governmental administrative center, the decree letter sent from the administrative center regarding these issues was of great importance for the materials being taken to Medina in that 20 Egyptian *kese* that had been transferred from the Egyptian delivery ship for the repair costs had been received, the materials and munitions required for repairs were received, and the compensations were paid from this money. The people in charge were requested to immediately start the repair works in the water conduits, water wells, and other places specified in the book by personally discovering and estimating the places to be repaired; to record in the book in detail the labor charge, supply, munition, and other costs; and at the end of the works to seal the book by having the places that were repaired be checked by the Sheikh al-Haram and the court, specify the locations in detail and send it back to Istanbul (BOA, Hatt-ı Humayun Tasnifi, nr: 1745).

The repair of the waterlines flowing in Medina, the water wells, and other blessed places is understood from the expeditionary notebook to have cost 30 Egyptian *kese*. (BOA, Cevdet Evkaf, nr: 23414) By allocating the 30 Egyptian *kese* from the Egyptian treasury bill of lading for the water, well, and reservoir repairs and the Medina Munawwara well locations, the repairs and maintenance were carried out in 1139 AH/1726 AD through the artifice of Jeddah Governor Abubakir Pasha (BOA, Cevdet Belediye, nr: 1147).

We find *Ayn az-Zurka*, also found in Medina, among the issues that Vizier Ahmad Pasha al-Jazzar, the Damascus Governor and Hajj Amir, wrote about article by article on the receipt dated Muharram 28, 1207 AH/February 10, 1793 AD, which he sent to the Court of Humayun. According to this, the repair of the *Ayn az-Zarka* water conduits, wells, and earthworks by the local people had been ordered by the central government; however, because the central authority didn't know if the repair had been done or not, certain measures were seen to have been taken about the repair issue when the command had arrived: The freshwater well at the home of Sharif Hatun, which was in the vicinity of *Ayn az-Zarka*, was requested to be added to the *Ayn az-Zarka* with the intention of proliferating the water of the water channels that had been ruined. It was unable to be taken due to Sharif Hatun not consenting, but it would be able to be added within that year if it were to be consented (BOA, Cevdet Belediye, nr: 4804). The matter was handled on Rajab 13, 1207 AH/ February 24, 1793 AD in the Court Office of Humayun (BOA, Cevdet Evkaf, nr: 11098).

In the command of the Amir dated the start of Rajab 1211 AH (December 31, 1796 to January 9, 1797) that was sent from Istanbul to the Jeddah Governor and Medina Guard Yusuf Pasha, the *Qadi* of Medina, and Trablusizade al-Hajj Ismail in Medina, the repair works regarding the specialists' reports where, because the arch and roof of the Egyptian Gate in Medina was about to collapse, it was to be rebuilt with 7,500 *kuruş* (120 *kuruş* = 1 *akçe*) as the expense would be immense if its demolition were required and the water conduits of the *Ayn az-Zarka* in particular were to be soundly protected from floods using 30,000 *kuruş*, was ordered to start for the moment by taking 1,500 *kuruş* from al-Haram to bring the rain under control until news comes from Istanbul (BOA, Cevdet Belediye, nr: 836).

30,000 *kuruş* was requested to be taken from the legacy money that was to be sent to Istanbul of Sheikh Mushibi Idris Agha, who had passed away in Medina, and given to Trablusizade for the repair of the water conduits of *Ayn az-Zarka* and other areas in need of repair in the holy city as well as the repair of the Egyptian Gate's arch and other areas that were in ruin and ready to collapse; the estimate notebook was requested to be sent to Istanbul by having the maintenance and repairs done soundly and quickly in these places (BOA, Cevdet Belediye, nr: 836).

Jeddah Governor Yusuf Pasha stated in the letter dated Muharram 7, 1212 AH/July 2, 1797 AD and sent to Istanbul that this money had been given to his subordinate, Trablusizade Ismail Efendi. Yusuf Pasha, who provided the news that lime, and other materials had been procured as repair agents, reported that two competent sewer masters, two water maintainers, and two stonemasons would need to be sent from Istanbul (BOA, Cevdet Belediye, nr: 836). In the Imperial Decree dated Safar 23, 1212 AH/August 17, 1797 AD, the noble order was written to the architect deputy commander and the water minister for the urgent procurement and delivery of these masters and specialists (BOA, Cevdet Belediye, nr: 836).

From the submission dated Safar 27, 1212 AH/August 21, 1797 AD, payment for the two water maintenance specialists who were found fit to be sent from Istanbul for performing the repair and maintenance of the places in Medina and their per diems were requested from the state (BOA, Cevdet Belediye, nr: 923). The request was made from the administrative center that the per diems be given as required for the provision of their fees and supplies, and in the opinion of the water minister, by choosing the two desired water maintainers from those possessing skill and prowess in art at the head of the water maintainer masters and the notables in business alliance from the water maintainer family (BOA, Cevdet Belediye, nr: 836).

When researching this history of this event, Sha'ban 17, 1122 AH/October 11, 1710 AD was the date when the need had existed for two water maintainers for the Mecca water conduits, and the per diems of the water maintainers being sent from Istanbul were stated to have been paid from the treasury as 300 *kuruş* for a total of 600 *kuruş*. Thereupon, the sultan ordered 600 *kuruş* be given through the decree dated Safar 27, 1212 AH/August 21, 1797 AD. In addition, the judgment dated Shawwal 13, 1173 AH/May 29, 1760 that was sent out from the Imperial Office stated 600 *kuruş* to be insufficient as the water maintainers' salary and that each would receive an additional 1,000 *kuruş* payable from the Egyptian honorarium (BOA, Cevdet Belediye, nr: 6113). Upon this, the two water maintainers assigned to Medina were ordered to be paid a per diem of 1,000 *kuruş* on Rabi'l 6, 1212 AH/August 29, 1797 AD (BOA, Cevdet Belediye, nr: 923).

According to what is understood from the endowment that Sakizli al-Sa'id Ahmad bin al-Sa'id Ibrahim al-Andalusi made in 1713, across from the madrasa he had had built, he had a two-faucet bathhouse built that had two wells, a pool, and laundry room. This group of structures falls to the north of the Prophet's Mosque. A fountain is understood to have been made next to the madrasa's main door by the same individual, and the foundation was understood to have stipulated that they were responsible

for servicing the madrasa door and that, in return for their service, 5 *kuruş* would be provided annually as well as an additional 5 *kuruş* being given for the water maintenance service (Aydın, 2007, p. 123).

Because of the importance of the Ottoman central government always maintaining remedial paths for water issues, issues such as repair and maintenance came ahead of other developments when they brought to the agenda. In fact, a report sent to the administrative center from the local officials who knew well this central approach reported that the channels of the *Ayn az-Zarka* were underground and, stating the repair of the *Ayn az-Zarka* to be incomparable to the matter of the repair of the tower at the Egyptian Gate, that the masonry facilities and some locations were in need of renovation. In addition, Trablusizade Ismail Efendi stated in the report that the 30,000 *kuruş* provided for the repair would not possibly be sufficient or solidly repairing and that the required repair work would not be able to be completed in a short period of time (BOA, Cevdet Belediye, nr: 6271). Trablusizade, who had completed his estimations, is understood from the proposals dated 1214 AH/1799-1800 AD to have requested permission to return to Istanbul (BOA, Hatt-ı Humayun Tasnifi, nr: 109).

Due to the ruination of the water channels, some bastions and small lakes on the way to Hejaz needed to be repaired and maintained. For this reason, in an offer sent by the local government to Istanbul on Jumada al-Awwal 3, 1258 AH/June 12, 1842 AD, the request was made to determine the amount of expenses by checking the repair and maintenance of bastions and water channels with the appointment of a private official. What was needed to be done was declared by exploring the bastions whose repair had been reported and presenting the notebooks to the administrative center. In the explorations and evaluations that were made, the repair costs for the 16 bastions that would be repaired was predicted to reach 2,605 *kese* and 161.5 *kuruş* (BOA, İrade Dahiliye, nr: 61). In the command sent from the center regarding this, the request was made that the repair and construction costs of the 3 bastions near Medina with the implicit approval of the Sheik of Medina Sharif Pasha and of the 13 bastions near Damascus with the implicit approval of the Governor of Damascus Ali Riza Pasha and the Damascus Treasurer would need to be covered by the Damascus treasury.

Similarly, the salaries of the clerks who served under the entourage of the Medina Sheikh al-Haram, Medina and Mecca Administrators, and Medina *Qadi* and Director in 1259 AH/1843-1844 AD and which needed to be sent by Surre from the treasuries of *al-Haramain* [the two Harams of Mecca and Medina] and of the Humayun *Waqf* [foundation] had reached 1,300 *kese*. These salaries were sent annually from the administrative center as gold (BOA, İrade Dahiliye, nr: 61). Meanwhile, with supplying and sending this much gold from the administrative center appearing difficult, Egypt sending that amount again as gold by remittance from taxes was made clear in 1257 AH/1841-1842 by the Sultan's decree, and the pilgrims were saved from trouble by the central government doing the repair and construction before leaving the expenses from the 16 bastions, whose repair and maintenance was essential, to the local governments (BOA, İrade Dahiliye, nr: 61).

During the periods when the Ottoman State was strong, all expenses from the Hejaz region were covered by the central budget. The money that remained after spending the expenses that were often covered by the Egyptian treasury on consumables was recorded as income to the central treasury.

In the periods when the Ottoman State's economic power was weak, the maintenance expenses of the Hejaz region emerged as a burden in addition to the other costs. The state, feeling the need for direct support from the public in such times, encouraged public contributions and even organized groups by printing tickets in this context. Government officials also participated in these groups, which were conducted with the personal participation of the sultan. Additionally, the direct support from the public and notables through donations and campaigns was guaranteed by the state. In fact, the sultan ordered the Ministry of Law Enforcement to be informed about those who had helped bring water to Medina and build fountains by organizing a notebook that stated their names and the amount of help

they had done (Altınöz & Demirlikan, 2008, p. 19). Similarly, upon the end of the donation tickets that had been printed for bringing the water of *Ayn az-Zarqa* to Medina, the sultan's permission was requested for printing new tickets. In such hard times, the way of covering the costs of the water conduits was seen to have been met from the income obtained from the tickets that were printed. (Altınöz & Demirlikan, 2008, p. 19).

The times when the climate was dry for some years in the Hejaz region (especially in Mecca and Medina) also was a situation where the water levels in water tanks were always expected to decrease. We see that, when faced with such situations, both local governments and the central administration had engaged in alternative searches for meeting the needs of the people of the region and of the pilgrims who had come to the place for performing the pilgrimage.

One of the ways for solving the water problems that appeared in Mecca and Medina in particular in accordance with the reality mentioned above appears in front of us as the district of Yanbu, which provides the Red Sea connection between Medina and Jeddah City (i.e., Mecca's gateway to the Red Sea) as a port city. A document sent from the Secretary of the Viziership to the Ministries of the Navy, Trade, and Public Services dated Ramadan 27, 1317 AH/ January 29, 1900 stated that, due to the lack of rain in the Hejaz region for three years, just as no water was left in the cisterns located in Jeddah and Yanbu, even *Bir al-Hamidiyah* located in Jeddah had diminished considerably (BOA, A.MKT.MHM, nr: 579/19). It stated that, in order to prevent this year the troubles that had been experienced last year, artesian wells would be built and the water shortage resolved by sending technical staff to the region per the proposal of the British delegate Dr. Diskon. Two officers with tools and equipment were requested to be sent to Jeddah and Yanbu in case the Ministry found the proposal made by the British delegate to be appropriate, and if examining the land structure of the region finds it suitable for opening an artesian well (BOA, A.MKT.MHM, nr: 579).

We learn from the statements of the document that, thanks to the Special Administration, which had been sent to Yanbu making by the Naval Shipyard the previous year making iron cisterns in connection with this, by passing 2-3 tons of water from the Nile a day and loading it onto the Zilal Ferry, the problem was alleviated to an extent; however, it appeared far from being able to meet the troubles of the current year. In order to eliminate these troubles, the decision was made to send a few rather large water barges from the administrative center and transporting by special administration ferry the Nile water filled from Suez first to Yanbu and then as needed to Jeddah, and a ferry was assigned for this task (BOA, A.MKT.MHM, Dosya nr: 579). Because the artesian wells to be opened as a result of the investigations were understood to not provide a better result and their costs were intolerable, this idea was abandoned and they resorted to sending a large water barge in addition to the measures of the previous year and allocating a special administration ferry to be filled with Nile water from Suez (BOA, A.MKT.MHM, nr: 579).

According to what we understand from the contents of Bill #124 dated Sha'ban 24, 1317 AH/December 28, 1899, due to the distance from Suez to Yanbu and Jeddah and no ferry was available to be allocated for this task as water transport was not possible with the barges, this practice was to be abandoned; the Naval Ministry declared on Ramadan 10, 1317 AH/January 12, 1900 AD that, in order to prepare the required water, the only solution was to place distilling machines at appropriate points. (BOA, Sadaret Mektubi Kalemi, nr: 232).

In a letter issued from the Secretary of the Viziership dated Shawwal 5, 1317 AH/February 6, 1900 AD and sent to the Ministry of Health, because of the danger and fear of running out of water in Jeddah, consuls in the region requested dispatching a cistern ferry that would be able to produce at least 25 tons of water daily before the pilgrims near return and until final measures are taken (BOA, Sadaret Mektubi Kalemi, nr: 127). Discussing the missive in *Meclis-i Mahsus-ı Vükela* [Ottoman Parliament]

regarding the issue of pilgrims and the local people of Jeddah and Yanbu facing the danger of perishing due to water shortages, the decision was made that for now both Jeddah and Yanbu needed to have a ferry with a cistern, that the compensation and other expenses of supplying a cistern ferry that could transport at least 50 tons of water per day from the Suez would be covered using the quarantine revenues, and that an interest-free loan would be provided in the name of the treasury (BOA, Sadaret Mektubi Kalemi, nr: 127). The Naval Ministry objected to this issue, stating that at least two years would be needed to produce the water needed with the completion of construction even if the order to build the water distilling machines started today (BOA, Nezaret-i Umur-ı Sıhhiyye Tahrirat Odası nr: 127). Because the local people and pilgrims lack the strength to endure in this period, they were stated to be unable to be assessed within the scope of the measures that needed to be taken (BOA, Nezaret-i Umur-ı Sıhhiyye Tahrirat Odası nr: 127).

In the research letter dated Ramadan 29, 1317 AH/January 31, 1900 and given to Ottoman Parliament on this issue by Monsieur Rölen, who had been commissioned with the construction of Kamran Hospital and had requested the privilege of building a water-distilling machine in Jeddah, he stated each ton of Nile water from the Suez would be sold for 15 *kuruş* and its transportation to Jeddah would cost one British pound per ton (BOA, Nezaret-i Umur-ı Sıhhiyye Tahrirat Odası nr: 127).

The document dated Shawwal 15, 1317 AH/February 5, 1315 AD and sent from the Secretary of the Viziership stated that it was not interested in surveilling the costs of the 50-ton ferries that would be sent from the Suez and that paying this from the quarantine revenues would be inappropriate, as well as that providing the special administration the task of supplying water through the Red Sea would be better (BOA, Sadaret Mektubi Kalemi, nr: 130).

Water shortages in Jeddah and Yanbu were again brought to the agenda at the session of the Ottoman Parliament on Jumada al-Awwal 9, 1322 AH/July 22, 1904. In this meeting, the Hejaz Province had written for a water filter and water treatment (purification) machine be sent as soon as possible to meet the needs of pilgrims due to the lack of water in Yanbu. The decision was made to supply a distillation and steam machine suitable for producing water at the level that would meet needs during the Hajj season like the purification machines found on ships that conduct long voyages for producing water suitable for drinking water from the sea during the journey. According to the research done on this, the boiler of a distilling machine that can provide 50 tons of water in 24 hours and all its accessories was reported to be possible to manufacture for 915 British sterling on the condition that it be delivered from London in three months, this in response to the communication that had previously been maintained with the Naval Ministry regarding stocking a water machine for both the Jeddah and Yanbu piers; along with this money, the cost of bringing the machine from London to Istanbul, sending it from there, and positioning it would reach an additional 1,500 Ottoman lira, the a period of about two months would be needed between the delivery to the site and installing it in place.

Although bringing the two filters for Jeddah and Yanbu had been agreed upon for 3,000 lira, this had somehow gotten hung up; because the supply later came from Hejaz and the need was confirmed in letters, in addition to the sultan already have made a ruling on this issue, the Naval Administration brought and placed them in a hurry in accordance with the previous decision and the 3,000 Ottoman lira for their costs and expenses was covered as an interest-free loan in the name of the treasury from the sanitation revenue (BOA, DH. MKT, Dosya nr: 892). As we have learned from this information, we can easily state that the previous meetings and inter-institutional correspondences had not reached their desired results.

In the memorandum sent by the Ministry of Finance on the Ottoman Parliament records dated Dhu al-Qadah 6, 1330 AH/October 17, 1912, the decision was made at the opening of the General Assembly and in accordance with Article 36 of the Fundamental Law to exempt the distillation machine

purchased from Europe by the Hejaz Sihhiyye for arrival at Jeddah in order to eliminate the water shortages suffered by pilgrims from the customs import tax on cement, coal, and various tools and equipment belonging to them (BOA, MV, nr: 227).

A commission with the authority to take measures regarding sanitation and cleanliness issues in the Hejaz region submitted to the Sanitary Affairs Council on Kanunusani 7, 1310 (Rumi Calendar), its reports clearly stating the measures needing to be taken and implementation to be made as a result of long studies (BOA, DH. MKT, nr: 3233). (This report had set forth the urgent measures that need to be taken in Mecca, Medina, Arafat, Mina, Jeddah, and Yanbu.

According to the report, due to the scarcity of drinking water in the district of Yanbu in connection with Medina, pilgrims are constantly suffering from thirst. The rainwater that rarely falls in Yanbu is collected and stored in cisterns. Because this water is not always refreshed and houses many animals within, it must be boiled first prior to use. Because this kind of behavior cannot be performed safely, the health care ministry needs to take urgent measures here (BOA, DH. MKT, nr: 3233). Having the water from Nahl Well located 4-5 km away from Yanbu funneled to the city through iron pipes and separating the water among 4-5 fountains is deemed necessary, especially where pilgrims are accommodated. Many of the diseases that can occur from drinking foul water can be prevented in this way. The water in the cistern is recommended for laundry and toilet usage. This report additionally stated that cisterns should be kept under control and the required cleaning should be done to them (BOA, DH. MKT, nr: 3233).

Another issue the commission urgently addressed was the problem of the pools that form from the sea extending into both Yanbu and Jeddah. The report stated the pools formed from the sea protruding onto the north and south sides of Yanbu to be the main cause of the persistence of malaria and to increase the loss of life for people suffering from the disease when combined with other factors. The commission, which had seen other reports on this issue, agreed with the proper covering of the extremely harmful pools, the prohibition of gathering rainwater, and the prevention of sea water from mixing into these pools during high tides (BOA, DH. MKT, nr: 3233).

The same commission made the following assessment as well about the water from *Ayn az-Zarka*, the lifeblood of the city of Medina. It emphasized the water source of *Ayn az-Zarka*, which drained in a unique way underground from the mountain, to be very abundant and to have clean water suitable for drinking; the fountain's surroundings, which are the points from which its water is distributed, must be kept extremely clean at all times; and insistently prevent pilgrims from washing their laundry at the fountain (BOA, DH. MKT, nr: 3233).

Supplying fresh water daily with water cisterns and devices for distilling sea water using ferries over Yanbu, a coastal town especially close to Medina, and Jeddah, the coastal city of Mecca, is observed to have been attempted at the beginning of the 20<sup>th</sup> century. No sacrifice was spared to meet the needs of the locals and pilgrims, and even in times when the state had financial difficulties, the state is seen to have resorted to interest-free loans from other institutions (BOA, DH. MKT, nr: 892).

**As a result**, while Medina waterways had once been self-sufficient, over time the growth of the city, drought and the intense arrival of pilgrims to the area during Hajj season revealed brought water shortages into the open. In place of the water springs that had dried, the city attempted to meet its needs with newly open wells and water sources that were increased by adding them together. The need for water was especially exacerbated during the Hajj season, efforts were made to find immediate solutions.

Water resource protection, the collapse of water conduits and wells as a result of both disasters that occurred from time to time as well as aging, and even their destruction was always taken seriously by

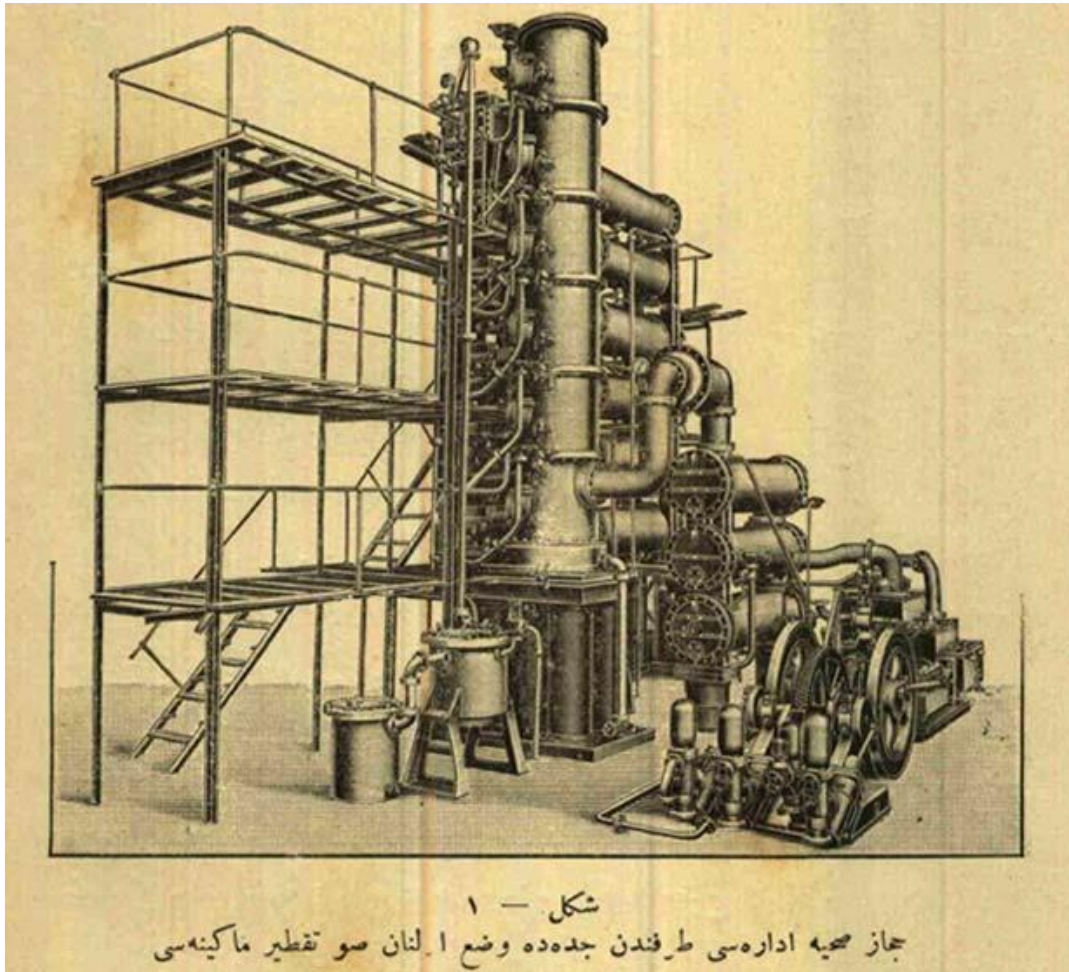
the Ottoman Empire; compared to other locations that would be repaired, the maintenance and repair of water resources was received first on the agenda and the aim was to complete these tasks. In order to achieve this, both the central government and local government spared no sacrifice, and large budgets were sent to the region.

Even in the final times when the Ottoman Empire was financially constricted, it did not ignore this sacred duty; campaigns were organized through donations and assistance vouchers that would be affiliated with local and state officials on a voluntary basis, and the attempt was made to not leave the local people without water nor the pilgrims during Hajj.

We observe the water scarcity that had occurred in connection with the drought and population growth that emerged in Mecca, Medina, Jeddah, and Yanbu had been attempted to be relieved by transporting water taken from the Nile River using ships and distilling and storing the water in water cisterns.

Ultimately, all these efforts are evaluated as a matter of prestige for the Ottoman Empire, which used them more visibly in the last days of the institution of the caliphate, and until these sacred places were removed from its care, the basic needs of the people were considered the priority issue and meeting their needs was attempted meticulously.

#### Appendices:



Source: <http://gizlenentarihimiz.blogspot.com.tr/2011/07/osmanlın-hicazda-deniz-suyunu-artma.html>

The above photograph is the water purification machine installed in Jeddah by the Hejaz Sanitary Administration.



Source: <http://gizlenentarihimiz.blogspot.com.tr/2011/07/osmanlın-hicazda-deniz-suyunu-artma.html>

The above photograph is the water distribution center for the condensation machine that had been installed in Jeddah by the Hejaz Sanitary Administration; due to the closure of the Ottoman Parliament, it could not be implemented without being confirmed. In order to remedy this setback, a temporary law was put together and the law was submitted for approval on August 30, 1910.



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