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On its Water Tower*

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## XI

# THE WATER CONVEYANCE SYSTEM OF THE TEMPLE OF JERUSALEM WITH LIVING PURIFYING SPRING WATERS AND CLEANSING WATERS UNDER PRESSURE

## THE HARAM UNDERGROUND NETWORK OF CISTERNS, CANALS AND CONDUITS

### OVERALL PRESENTATION

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## XI

### The Haram's Underground Network of Cisterns, Canals and Conduits

#### Overall Presentation

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1/ The site of early Jerusalem had been so transformed in the course of the last three millennium of its turbulent and violent history that it is impossible to reconstruct it in its initial ancient form, or even its successive forms.

**In fact only two series of topographical certitudes remain :**

**-A-** Some rare facts such as the configuration of the Haram originated from the Muslim occupation in the 7<sup>th</sup> century EC and 8<sup>th</sup> century EC.

**-B- A double almost transtemporal certitude :**

**a/ The topographical contours levels of the underground bedrock** as measured in the 19<sup>th</sup> century, including those of the underground of the Haram that mainly resulted from the *Ordnance Survey* and works of Wilson, Warren, Conder and Schick.

**b/ The incrustations inside this bedrock** that had been built up across the centuries and remained intact as had the Cisterns and conduits cut into the rock.

(Though for the part of the underground near to the surface of the Haram, it is sometimes necessary to take into account some underground works that had been made by the Muslims after the Crusades, in particular on the sides of the Al Aqsa Mosque, in view of providing water to the faithful for the ritual washing of hands and feet for the Muslims.)

2/ In examining the topographical contours and elevations of the bedrock that were surveyed in the 19<sup>th</sup> century by Wilson, Warren, Conder and Schick, it can be remarked that early Jerusalem was situated on a rocky promontory, sloping from north to south, between two steep sided valleys :

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- The Valley of Kedron to the east, and the Valley of Tyropean to the west.

In the upper part of this promontory, the slope descending towards the valley was very steep and abrupt, and sometimes almost vertical.

At its summit, to the north, the rocky promontory culminated at **743 metres altitude** at the present site of the sacred Dome of the Rock.

The rocky promontory inclined from north to south with an increasing slope that ended above the confluent of two valleys that enclosed it.

The promontory of ancient Jerusalem was thus protected to the east, to the west and to the south by the very ravines that enclosed it.

The summit of the promontory, which is at present constituted by the inner platform of the Dome of the Rock, was limited to the north by a transversal rocky depression that was quite deep, as revealed by the levels of the underground rock that were surveyed in the underground of the Haram by the 19<sup>th</sup> century archaeologists.

Therefore, it can be imagined that from the strategic point of view, during the first phases of development of the ancient city, this depression was used as a defensive trench by the Jewish Citadel that dominated the rocky promontory, making an effective defence element of this natural summit.

It is on this same spot that the Citadel of the Hasmoneans, then the Antonia Citadel of Herod, were to be built, succeeding each other, and followed by the Haram.

The transversal rocky depression, situated to the north of the internal platform of the Dome of the Rock, was entirely filled-in during the extension of the ancient Herodian esplanade of the fortress Antonia to transform it into the Haram on the orders of Abd al-Malik, so as to position the Dome of the Rock altogether in the centre and on the summit, on a vast esplanade of circumvolutions designed to rival with that of the ritual Kaaba in Mecca, and with the clearly declared political ambition by the Umayyads of outdoing it.

3/ Initially Jerusalem, created by David as the capital of the Jewish Kingdom, was supplied with water from the Guihon Spring that flowed from the eastern flank of the Jebusean Promontory, downstream of the Kedron Valley.

Later, during the reign of Ezechias, this spring was diverted by a tunnel so that it flowed into the Siloam Pool, situated inside of the ramparts of Jerusalem, so as to provide the city with water in the case of siege.

Further, in a more general manner Cisterns cut in the rock of Jerusalem enabled most families and the various communities to store large quantities of rain waters during the rainy periods of the year.

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But, very soon, the lower city of Jerusalem, that is to say the lower part of the promontory, developed and its population tended to overflow in peace time into the Tyropean Valley. Thus from a general point of view, an additional supply of water, both for the population and its animals, was necessary :

It was in this perspective that at least two dams for reservoirs were built to collect rain waters that flowed down from the hills situated to the north of Jerusalem:

**a/** A dammed Reservoir, at the outlet of the Bethseta Valley, situated to the north east of the ancient Jerusalem and preceding the Kedron Valley ; this dam-reservoir was constructed at the site of the 'Sheep's Pool' situated to the north east of the Haram.

**b/** A dammed Reservoir, at the outlet of a natural circle formed by the hills situated to the north west of the Haram with as the last collecting point for these waters the Pool of Struthon.

From these two dammed Reservoirs, a few vestiges of two **aqueducts cut into the rock** still remain today : these aqueducts carried the waters to the lower city.

**a/** The aqueduct from the dam of the Struthon Pool ran from north to south in the bedrock along the external base of the western rampart of the Haram.

**b/** The aqueduct from the dam of the Sheep's Pool ran from north to south in the bedrock along the external base of the eastern rampart of the Haram.

In fact only the lower part of the ancient city could be adequately supplied by these two aqueducts, because their waters could neither rise to the summit of the promontory where the ancient Jewish citadel stood (Haram) nor to the level of the platform where the Temple once stood downstream.

In fact the transversal depression in the rock, now filled in under the northern part of the Haram, separated these two dam reservoirs from the rock crest of the promontory:

For example, Conder carried out measurements in the underground rock at the level of the Pool of Israel, the base being on the flank of this underground depression, and he noted that the rock at the level of the flow from the Israel Pool was situated at height of **715 metres** above sea level, whilst the surface of the Haram is at an average altitude of **738 metres** above sea level.

**4/** The survey of the underground rock of the Haram and its adjacent area, as well as the geological data supplied by Conder, reveal that in the summit of the promontory of ancient Jerusalem, that is to say the nowadays Haram, the underground bedrock had, and still has, an oval form a little like that of a human face. (cf. map)

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The axis of this underground rock oval declines with an average downwards slope of 15° from north-north-west, that is to say from the area of the internal platform of the Dome of the Rock, downstream and south-south-east to the area of the Triple Gate of the southern rampart of the Haram.

The Esplanade, now the Haram, is a rectangular platform, half natural and half man-made, that was built around and above this oval rock that served as a foundation.

This rectangular platform has been surrounded by four ramparts, and the space inside between the sloping surface of the natural rock and the vertical ramparts has been filled with earth and rubble to form an elevated flat horizontal surface.

According to the reconstitution and geological terminology of Conder :

**-A-** The upper layer of the Jewish citadel (Haram) was constituted with earth, rubble and mezzeh, a kind of fossilised clay.

This upper layer ("mezzeh" according to Conder terminology) filled all the surface and all the space between the bedrock and the ramparts of the Haram.

Its horizontal surface nowadays by simplifying consists of three levels, with a slight difference between the three.

This upper layer (mezzeh) is not completely impermeable and consequently in antiquity could neither be used for water Cistern-reservoirs nor for constructing water channels.

**-B-** Beneath the upper layer, made of earth, stones and mezzeh, is an intermediary bed of rock in the form of an oval, descending towards the south with an inclination of 15° from the "Holy Rock" of the Dome of the Rock, where this rock projects onto the surface of the Haram.

From the Sacred Rock at the summit this layer of rock progressively descends with an inclination of 15° into the underground of the Haram to a depth of about forty metres relative to the Haram's surface : this layer of rock reappears downhill and outside of the Haram, where it is in general completely denuded.

According to the terminology used by Conder, this rock is called 'Malachite'.

This sloping layer of malachite rock is between twenty and thirty metres thick and is impermeable.

**-C-** Below this intermediary layer of Malachite is another impermeable layer of rock called 'Dolomite' by Conder.

Both of these rock layers are superposed with the same average inclination of 15° from north to south.

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It is mainly within the layer of Malachite and to a much lesser degree within the layer of Dolomite that the Cistern-reservoirs were built in antiquity by the Jews in the natural rocky foundations of the Citadel, situated upstream of the platform on which the lost Temple stood.

This same platform of the Temple was completely razed by Hadrian and the Citadel of the Jews became the Haram of the Muslims.

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- In this study the underground Cisterns built in masonry at a later period will not taken into consideration.

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- A plan of the underground Cisterns and the channels in the rock beneath the Haram whose altitudes above sea level have been calculated on the basis of the data transmitted by the 19th century archaeologists illustrates this Book and allows visualising the demonstration that follows below.

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5/ The horizontal surface of the Haram is composed of several levels. These successive strata, a few natural others mostly man made, covered with their horizontal planes the natural slopes of the original rocky promontory.

The primitive rocky geological slopes descended from the summit marked by the Sacred Rock (Dome of the Rock) towards the four cardinal points of the compass :

- To the east and west in the direction of the Kedron and Tyropean Valleys, which tightly closed in the promontory on its eastern and western flanks.
- To the north in the direction of the transversal depression of the rock situated to the north of the internal platform of the Dome of the Rock.
- To the south, in the direction of the natural slope of the promontory that falls steeply from north to south towards the Siloam Pool.

Because of the topography of this original base rock, the different horizontal levels, built and rebuilt over the passage of time have been designed with a shallow slope so as to permit the drainage of rain waters in the rainy season to be collected in the Cisterns situated underground at the four cardinal points of the Haram and at the extremities of its bedrock summit so as to store the maximum quantity of waters for the dry season.

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By simplifying the data of the 19th century archaeologists, three different levels can thus be distinguished at the surface of the Haram, (descending from the top) :

- The level of the internal platform of the Dome of the Rock culminating at an elevation of **743 metres** above sea level.
- An intermediary level at a median elevation of **739 metres** above sea level.
- The level of the remainder of the surface of the Haram is at a median elevation of **737 metres** above sea level
- In addition the surface of the Haram falls slightly at places near to the ramparts, where at certain points the surface of the Haram is at an elevation of **736-735 metres** and on rare occasions below.

In a general manner the average figure of **737-738 metres** can be taken as acceptable as an approximate reference for the elevation of the surface of the Haram above sea level when it is necessary to evaluate the approximate comparisons of the underground measurements carried out beneath the Haram by the 19<sup>th</sup> century archaeologists.

6/ The detailed systematic exploration and the precise measurements taken of the Cisterns and the different channels and conduits in the Haram rocky underground were principally carried out in the 19<sup>th</sup> century by Pierotti, Barclay, Wilson, Conder and Schick. Conder has collated the whole of these measurements especially the respective elevations between the surface levels of the Haram and the levels of the underground rock of the Cisterns.

On the one hand Wilson, Warren and Conder, and on the other Schick, have separately published systematic surveys, with sometimes differing figures, without however, diverging in any significant manner.

In general it seems that Schick, with the official preparation of the scale model of the Haram for the Universal Exhibition of Vienna, had from the overall point of view obtained more facilities than for example Warren to carry out his exploration of the Haram underground.

Thus whenever the data of the surveys collected by Warren or Schick diverge it was necessary, for the purpose of this study to choose between one of the following options :

- To privilege the figures of Schick.
- To use an average between the figures of Warren and Schick
- To use the figures of Warren or of Schick which appeared to correspond best with the general cohesive arrangement of the whole underground hydraulic system.

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7/ The underlying rivalry that reigned between Warren and Schick resulted in a different numbering system in both of the key publications on the hydraulic system in the Haram rocky underground.

- For **Warren**, the Temple had necessarily stood on the internal platform of the Dome of the Rock.

On the basis of this hypothesis Warren gave the first five numbers (**Cistern n°1**, **Cistern n°2**, etc.) to the Cisterns beneath this platform, even though these Cisterns were obviously less ancient, even though they were very smaller than those situated downstream to the south, and even though the final construction of parts of these Cisterns was of a late period even of the Muslim period.

- For **Schick**, the Temple of the Jews had also necessarily stood on the internal platform of the Dome of the Rock.

But, guided by a subconscious and latent instinct, Schick's numbering of the Cisterns commenced with those that received the purifying waters from the Etam Aqueduct, which is to say the giant underground Cisterns to the south and downstream.

Therefore, these Cisterns bore the first numbers (**Cistern n°1**, **Cistern n°2**, etc.) in Schick's system.

Nevertheless, even if Schick's numbering system is more coherent and corresponds to the historical and archaeological reality, it has been decided to use Warren's numbering system in this book for a number of following reasons :

- Effectively, it seems that a credit is due to Warren because, on the one hand, he drew up the survey plan with the elevations of the different levels of the subterranean rock of the Haram without which this study could never have been realised, and, on the other, he was the first archaeologist who had attempted to establish the most complete inventory of the subterranean hydraulic system, in difficult and on occasions even dangerous conditions.

- Further, most of the 19th and 20th century archaeologists adopted Warren's numbering system, even if more recent and elaborate studies have begun to privilege the more coherent system established by Schick.

8/ The **Cisterns** of the underground hydraulic system of the Haram can be classified into **different categories** based on a number of **diverse criteria** :

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**- Criteria relative to their material and the nature of their construction -**

**-A-** / The ancient Cisterns were cut into the heart of the natural bedrock.

The technique consisted of boring a more or less vertical shaft from ground level. Then once the bedrock was reached the shaft was continued for the thickness of what was to form the underground Cistern's roof.

The work then continued in a downward direction progressively enlarging the perimeter of the cavity to form the Cistern itself, which in early antiquity took the shape of an amphora more or less round and more or less deep.

During early Roman times, the form of subterranean Cisterns tended towards rectilinear and geometric forms with right angles.

When the Cistern was completed, the openings that had been used for its construction were hermetically sealed with stone blocks either temporarily or permanently.

Certain of these openings situated above at ground level could then be used as well shafts or channels to collect rain waters whilst others were used as water supply conduits or access for maintenance.

In the same manner stairways were progressively built into the rock to facilitate access for workers during the construction of the Cistern. These stairways could later constitute passage ways for drawing water or for the adjustment of weirs and other arrangements installed to control the flow of waters as well as for maintenance of the installations.

**-B-** / Certain Cisterns that had initially been cut into the rock in greater antiquity were successively enlarged and transformed by masonry works.

Part of this masonry work dated from the time of Herod whilst other parts could be attributed to the Muslims :

Such is the case for the Cisterns that are found directly under the inner platform of the Dome of the Rock, or in its immediate proximity, some of which were modified by the Umayyads for the edification of the Dome of the Rock as a new sanctuary for Islam destined to replace Mecca.

In addition certain underground Cisterns were transformed into mosques over the ages.

- Concerning all these Cisterns, certain of which had large sections built in masonry, only the parts originally cut into the rock, wholly or partially, are taken into account in this book.

- Or are taken into account in this study only those Cisterns where the masonry could be logically attributed to the works of Herod for the improvement of the whole underground hydraulic system designed for the cult of the new Herodian Temple.

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-C- / The most recent Cisterns were built in masonry by the Muslims in the mezzeh layer of the Haram.

This is specifically the case for certain Cisterns built in the western part of the Haram by the Muslims or in the parts of the Tyropean Valley that had been filled next to the ramparts in ancient times in order to raise the ground to the level of the Jewish Citadel's surface.

In this book these Cisterns which were not cut into the bedrock are not taken into account and are posterior to the destruction of the Temple of the Jews.

9/ It is also possible to classify the Cisterns in the underground rocky hydraulic network in different categories and according to other criteria :

**- Criteria relative to their water supply, to their size, to their depth  
and to their elevation above sea level -**

From the moment it was established, on the basis of Biblical precepts, that living waters issued from a spring were the only source of supreme purification in the Sanctuary, the organisation of the Temple hydraulic system was developed relative to the geological imperatives of the subterranean bedrock situated upstream of the Temple, that is to say beneath the Jewish Citadel that was to become the Haram.

The Aqueduct of Solomon, or the **Etam Aqueduct**, carrying living and purifying source waters to the Sanctuary, penetrated into the underground beneath the Haram at an elevation of **728 metres** above sea level, and **10 metres** beneath the average surface level of the Haram situated at an elevation of **738 metres**.

These living spring waters could therefore only flow further on to a lower elevation for storage :

This is why the five largest Cisterns of the Sanctuary's water reservoir (water tower) were obligatorily concentrated at the extreme south of Haram's subterranean bedrock with their bases situated at an elevation necessarily less than **728 metres**, that is to say at an elevation between **724 metres** and **716 metres** above sea level.

These **5 giant storage Cisterns** are according to Warren's numbering system :

- **Etam Aqueduct** (for Reference) :

**728 metres** altitude : **10 metres** below the surface of the Haram.

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- **Cistern n° 8 (The Great Sea):**  
Elevation at its base : **724 metres** : **13 metres** below the surface of the Haram.  
Approximate storage volume: **12 millions litres** of water.
  
- **Cistern n° 9 :**  
Elevation at its base : **724 metres** : **20 metres** below the surface of the Haram.  
Approximate storage volume : **1.500.000 litres** of water.
  
- **Cistern n° 7 (The Sea):**  
Elevation at its base : **717 metres** : **19 metres** below the surface of the Haram. Approximate storage volume : **8 millions** litres of water.
  
- **Cistern n° 11 :**  
Elevation at its base : **715 metres** : **22 metres** below the surface of the Haram. Approximate storage volume: **5 millions litres** of water.
  
- **Cistern n° 10 :** (Sloping from upstream to downstream : Propulsive Cistern)  
Elevation at its base : **721 metres** : **16 metres** below the surface of the Haram. Approximate storage volume: **2 millions litres** of water.

10/ The Cisterns of the underground hydraulic network of the Haram could also be classified into different categories and according to other criteria :

**- Criteria relative to their chronology and the progress in hydraulic technology -**

On this basis three major phases can be distinguished in the development of the underground hydraulic network built in the bedrock upstream of the Temple by the Jews :

**-A- The installations from period of Solomon and his successors (1st Temple)** that include amongst others :

- a The **Etam Aqueduct** (or the **Aqueduct of Solomon**, or **Lower Aqueduct**), which passes on the Wilson Arch to enter into the Haram underground.
- b **Cistern n° 8** (the '**Great Sea**' mentioned in the Septuagint)
- c **Cistern n° 9**
- d The south circular commencement of **Cistern n° 10**
- e The **Distribution Network** that passes under the Triple Gate and flew downstream of the Haram to supply the lost platform of the Temple.

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-f Certain elements in the rock of the first Cisterns designed to collect rain waters that did not flow directly from the summit of the promontory downstream south to the giant Cisterns which collected altogether living spring waters and rain waters :

These first Cisterns for the collection of rain waters flowing on the northern slopes of the rocky promontory were mostly situated around the Dome of the Rock.

-g The branch of an old channel that carried downstream to the south the rain waters collected on the north side of the Jewish citadel.

This old branch is situated at the extreme west of **Cistern n° 5**, which will be installed by Herod, during the modernisation of the whole of the hydraulic underground system designed to supply the new Temple that was in construction (cf. infra).

**-B- The installations from period of the Macchabees, Hasmonean Great Priests and Kings (2d Temple)** that include amongst others :

-a **Cistern n° 7** (The 'Sea' mentioned in Siracid)

-b Probably **Cistern n°2** and **Cistern n°34**.

**-C- The installations from period of Herod (3rd Temple)** when Roman technology influence (Agrippa) was particularly felt, that include amongst others :

-a **Cistern n°11**

-b **Cistern n°10** in its final form

-c **Cistern n°5**

-d In their final form : **Cisterns n°1, n°3, n°37, n°14, n°13, n°12, n°6, n°36**.

11/ The principal lines of development of this Underground Hydraulic Network will be examined in detail infra :

These lines of development were conditioned by the following technological progress :

**-A- During the Solomon period :**

a/ The first Cisterns of this period were cut as giant formless caverns (**Cisterns n°8 and n°9**).

b/ These huge, deep, caverns had to be supported at their centre by pillars left in the mass of the rock during the excavations works, and around which the Cistern was dug out.

c/ The Aqueduct, the Cisterns and the downstream water Distribution Network were all interconnected in cascade by subterranean conduits.

d/ Sudden changes in depth downstream (**Cistern n°9**) were conceived to accelerate the

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stream of waters from the Cistern into conduits that carried the waters down to the outlet point where the Temple was situated.

**e/** At this point in the development of hydraulic technology no system of decantation of the waters seemed to have been foreseen : this resulted in the periodically need to drain the Cisterns for cleaning and removal of silt built up over time.

**f/** Concerning this Solomon period it is worth noting that the pulley has been invented by Archytas between 460 and 365 BEC, that is to say half a millennium after Solomon :

This incidental remark renders rather derisory the idea that the abundant waters necessary for the Temple rituals could have been drawn from Cisterns whose bases would have been situated twenty metres below the surface of the floor of the Temple...

In addition these waters drawn in this case by the hand of man with the aid of recipients would not have been considered as living spring waters and therefore not valid for the ritual supreme purification of the religious officiants (cf infra).

**-B- During the Hasmonean period.**

**a/** The excavation of huge formless caverns with integrated supporting pillars was abandoned.

**b/** Instead **Cistern n°7** is excavated in a form sufficiently narrow so as not to need any more columns to support its heavy solid rock roof.

**c/** The forms of the Cisterns tend towards geometric lines and are now connected to each other by more or less rectilinear angles which replace the ancient sinuous curves of the Solomon underground channels and conduits.

**d/** The problems of decantation seemed to have been discovered or rather some empirical attempts were made to solve this problem :

**e/** To this effect, the base of the Cistern was conceived with a deeper bottom than was necessary for the flow of waters downstream, so as to trap the silt whilst the cleared waters could flow out at a higher level.

**-B- During the Herodian period.**

King Herod took advantage of the period from the demolition of the second Temple to the construction of the third Temple to reorganise and improve the whole of the underground water supply system for the Sanctuary.

The influence of Roman technology and the probable cooperation of Agrippa's hydraulic engineers permitted the complete redesign of the whole underground hydraulic system.

Resuming and simplifying these vast Judaeo-Roman works under Herod :

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**a/** The building of rectilinear aqueducts, called 'Upper' and designed to considerably increase and provide a lasting guaranty for the volume of waters necessary for the functioning of the Temple.

**b/** The reinforcement of the antique Etam aqueduct (called also 'Lower' aqueduct or Solomon aqueduct).

**c/** The construction of a giant new underground Cistern to the south and downstream of the Haram (**Cistern n°11**).

The comparison between the approximate lines of the Hasmonean **Cistern n°7** and the strict geometric lines of the Herodian **Cistern n°11**, (cf. map), the functions of both being identical, shows clearly the evolution in the underground hydraulic construction techniques and technology.

In addition like **Cistern n°7**, **Cistern n°11** has a sunken base, a sump in which silt could be decanted and collected below the waters outlet downstream point.

**d/** The construction, modification or modernisation of the Cisterns for the collection of rain waters on the north slopes of the Haram including **Cisterns n°1, n°3, n°14, n°13, n°12 and n°37**. All these Cisterns were systematically connected by conduits to the underground network permitting the waters collected to flow downstream.

Several of these Cisterns were compartmented and the depth of part of the Cisterns was modified in order to facilitate decantation in deeper water and to accelerate the flow of waters in a downstream direction. This to say that the Jewish and Roman engineers tried and succeeded to marry two apparently opposing functions :

- decantation by compartments amply attested by archaeology in numerous hydraulic installations in the Roman Empire.
- propulsion by impulsion by sudden increase in the depth of the Cistern, a function that seemed specific and in any case indispensable to Jewish hydraulics ever since the creation of the Temple's hydraulic system.

This functional contradiction renders sometimes interpretation of complex installations difficult to apprehend at times when certain descriptions of the small and medium sized Cisterns of the north of the Haram made by the 19<sup>th</sup> century archaeologists do not provide sufficiently precise data on this specific subject. Effectively for these archaeologists the hypothetical problem of the imperative religious circulation of the waters beneath the Haram seemed to them a very minor and secondary problem because this circulation of waters could in no way appear to their eyes as an unavoidable Biblical postulate.

Therefore their different observations, apparently inexplicable, were interpreted as a sort of side issue, or as the accessory and almost useless need to evacuate the overflow from the Cisterns in a very strange, elaborate and complex way.

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e/ Construction of the **Cistern n°5** in order to collect and permanently control the flow downstream of rain waters collected upstream of the Haram :

this **Cistern n°5** was most probably equipped with the latest Roman technological and hydraulic innovations including a giant drum with a vertical axle, as shall be seen infra.

The form structure and technologically very complex layout of **Cistern n°5** confirms, by itself, the installation of an immense system for the circulation and propulsion of waters that went far beyond the archaic and static system for drawing water that the 19<sup>th</sup> century archaeologists believed they were discovering and exploring.

f/ Installation of a modernised decantation system with the twin structured **Cisterns n°36 and n°6**.

g/ Installation of a specific network of conduits for distribution and control in a Roman designed geometric and rectangular grid that was positioned between the outlet of the **Etam Aqueduct**, the decantation **Cistern n°6**, the control **Cistern n°5** and the giant storage **Cisterns n°8 and n°7**.

h/ Increase in performance of **Cistern n°10** designed for the propulsion of the waters downstream to the Temple, through the underground system of conduits situated below the Triple Gate of the rampart of the Haram : This increase in performances of this propulsive **Cistern n°10** was obtained by the addition to the ancient formless Cistern of a long very rectilinear column of water that was installed following the levels of the bedrock, just before exiting at the southern rampart of the Jewish Citadel so that the living waters would gush out under the greatest possible pressure downstream onto the lost platform of the Sanctuary.

12/ Before examining, in precise detail, this vast underground hydraulic network with all its interconnecting Cisterns it can already be established in an irrefutable way the following great lines of evidence :

- That the **fifty millions litres** of waters stored in the five giant Cisterns and satellite Cisterns situated in the depth of the rock and downstream of the **Etam Aqueduct** were constantly impregnated, validated and ritually sanctified by the living spring waters carried by the same aqueduct from the **Solomon's Pools** where **400 millions litres** of spring waters and rain waters were constantly stored.

- In addition these waters religiously validated could only flow into the Mikvehs of the Temple and in particular into the Brazen Sea and the Mikvehs of the High Priest situated in the Sanctuary on the upper storey of the Parvah Chamber and on the upper storey of the Water Gate, **on the sole and unique condition that the Sanctuary would be positioned downstream** of this colossal underground hydraulic water storage and distribution system : **That is to say topographically downstream of the Triple Gate of the southern rampart of the nowadays Haram :**

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The ground under the Triple Gate is constituted by an impermeable rocky butte within which all the purifying waters flowing to the Temple could transit before being gushed out onto the level of the Sanctuary.

And in exactly the same way the abundant quantities of washing waters for the evacuation of the blood and dejections of the thousands and sometimes tens or even hundreds of thousands of daily sacrifices could only flow out onto the surface of the Temple Court with sufficient pressure on the condition that the Temple would be situated downstream of this system and consequently downstream of the Triple Gate of the southern rampart of the nowadays Haram.

Therefore the Temple *'washed by the waters spurting out from the lead pipes'* that Aristéas had contemplated with admiration from the heights of the ramparts of the Jewish Citadel, stood downstream of the present Haram, and the Haram at that time was in fact the Citadel protecting the lost Temple of the Jews.

**13/** The quantities of waters necessary for the Temple rituals, during the dry season included, were such that the underground hydraulic system had to be able to collect during the rainy season the greatest quantity of waters that flowed from the summit of the promontory of antique Jerusalem (platform of the Dome of the Rock).

A large quantity of these rain waters, which flowed from the summit of the promontory, streamed directly south and were carried through a vast network of channels that converged downstream in the Haram's underground rock to fill the group of the **5 giant Cisterns n°7, n°8, n°9, n°10 and n°11** as well as their smaller satellite Cisterns.

Because it was **only** in this group of **5 giant Cisterns** that the rain waters stored in the whole underground hydraulic system of the Jewish citadel (Haram) could be fecundated and validated for the Jewish cult, which is to say sanctified by the living purifying waters coming from the **Etam Spring**.

**14/** But it is in this same perspective that the Jewish hydraulic engineers endeavoured to painstakingly collect also all rain waters that flowed to the north, west and east from the summit of the promontory and its surroundings down the natural slopes fixed by the bedrock of ancient Jerusalem.

To collect these rain waters that did not flow directly towards the **5 giant Cisterns** to the south, a **second group**, consisting of **two principal sets of Cisterns**, was disposed all around the summit of the promontory.

These rain waters collection Cisterns were installed to the north-north-west and to the north-north-east of the Dome of the Rock :

*The Temple of Solomon Could not Stand  
On its Water Tower*

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But these Cisterns could only be excavated below the transversal rock depression which lays underground at the north of the platform of the Dome of the Rock and which descended steeply forming the gully that delimited the ancient Jewish citadel.

All the Cisterns in these two rain waters groups of storing Cisterns were also progressively connected to the whole of the general underground hydraulic network which was progressively built by the Jewish engineers so that all the waters collected or received could flow together **without exception** into the **5 fecundating giant Cisterns** situated downstream at the south of the Haram, and there-from they could finally flow further downstream onto the lost Temple platform.