

Eve Harow



The Biyar Aqueduct

In August 1995, the Dagan Hill, an unoccupied strategic location within the municipal boundaries of Efrat, was the scene of a major two-week protest (with deep involvement by the author of this article) against the Israeli government's plan to relinquish it to the Palestinian Authority in nearby Bethlehem. During the mayhem, we uncovered ancient man-made shafts in the ground and archaeologists were called in to investigate.

The Biyar system was apparently initiated by the Hasmoneans and extensively expanded by Herod the Great (37-4 BCE) as a solution to the growth of Jerusalem's population and the commensurate need for more water, especially during the festival pilgrimages bringing many thousands to Jerusalem. Local springs like the Gihon in Ir David and cisterns that caught winter rains no longer sufficed with the construction of *mikvaot*, pools and bathhouses. In fact, the Gemara (Ta'anit 19b) and Mishna (Shekalim 4) speak of the water shortage during the festivals and building the aqueduct as one of the uses for the half-shekel Temple tax.

The aqueduct is an incredible feat of engineering. They used very sophisticated techniques for those times, including measuring tools such as grommets, siphons and the best technology Rome could provide while combining different collection methods. The Wadi al Biyar section is springs sourced and used dams and shafts to channel water into an enlarged natural underground water tunnel. This tunnel also gathered rain percolating through the limestone until hitting a nonporous marl layer, creating



The covered shaft on the Dagan

an aquiclude¹ and then streaming all the water via its gradient.

It was in use until 1967 (a 2000-year run!) maintained over many periods and aided significantly by a pumping station built under the British Mandate in 1924, still visible near the *Pina Chama* at Tzomet Gush Etzion. It's now a fun tourist attraction where one can climb underground via one shaft, traverse the tunnel through muddy waters and see how water still flows in, then climb up a ladder and out another shaft further down the valley in between Efrat and Elazar, called appropriately *Nachal Pirim* (Shafts Creek), with 40 shafts. The nearby Gush Etzion Winery has a line with the same name on the label.

The Arrub section is a hewn stone surface aqueduct with dams and walls on the mountain ridges, wending 40 kilometres (10 km as a crow flies) at a gradient of less than 0.1%. Portions of it are still visible today although much of it was destroyed by negligence or dismantled over the years for use as building material. It was likely added after Herod's reign.

The northern section was what was discovered in 1995, the deep tunnel

carved horizontally through the mountain to empty into Solomon's Pools. In the absence of electrical pumps, gravity dictated the flow and the Dagan Hill was too high to straddle and keep the water flowing.

After a sojourn in the enormous catchment basins (capacity 250,000 cu/meters) of Solomon's Pools (not built by King Solomon but perhaps inspired by him), the collected water took different directions. One section led east to the desert fortress-palace at Herodian; remnants can still be seen on Efrat's Eitam Hill. Another, the Upper Aqueduct, apparently ended at Hezekiah's Pool in today's Christian Quarter, to supply Herod's Palace at Jaffa Gate, although north of Kever Rachel in Bethlehem no remnants have yet been identified. The Lower Aqueduct's destination was no less than the Temple Mount, and we do have sections in a few areas including the Sultan's Pools in Jerusalem and on Mount Zion.

Fast forward to 2020: the Dagan Hill is home to a few hundred families, and the municipality is building a park integrating the aqueduct with bike paths and walkways. We still flow towards Jerusalem, just now in traffic on the Tunnel Road.

¹ A geological formation that absorbs and holds water but does not transmit it at a sufficient rate to supply springs, wells, etc.

For a virtual tour of the Biyar, visit www.eveharow.com under Chol Hamoed tour.

Eve Harow is a licensed tour guide, podcaster and public speaker.