

The Water, The Tunnel, and History

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Peter H. Lowry,

Tonight's paper deals with events that occurred at the siege of Jerusalem by the Assyrians in 701 BCE. To put this episode in perspective, it is necessary to first take a broad look at some aspects of the early development of civilization in the Mediterranean basin.

You may remember from your college courses that western Civilization arose around the Mediterranean Sea fixed on two centers of agricultural productivity, the Nile River delta in the west (then as now Egypt) and the land between the Tigris and Euphrates rivers in the eastern Mediterranean, present day Iraq. The annual flooding in these river plains created an area of farm land where the richness of the soil was continually renewed. This obviated the need for farming tribes to continually migrate to new areas whose soil had not been depleted by the primitive agricultural methods of the time. Farmers could settle in fixed communities, and begin to build permanent towns and cities.

The agricultural productivity created food surpluses. Compared to previous farming cultures a relatively large percent of the population did not need to be involved in food production, but could pursue those advanced aspects of civilization which we have today, such as trade, government and sustained war.

The archeological evidence indicates that the process of transition from Neolithic hunting tribes to farming communities began as early as 5 or 6 millennia BCE and written records document established civilizations in both areas by 3000 BCE.

The two regions differed somewhat. Egypt was bounded to the south by jungle and to the east and west by desert. There was little potential for large groups of nomadic tribes to overrun its civilization, and there were only a few episodes of incursions from outside. Egyptian dynasties might wax and wane, but the ethnic composition of the people, the

writing, the language and culture remained remarkably stable and consistent over the centuries.

The civilization of the Tigris and Euphrates rivers had neither the unity nor the continuity of Egypt. It was open on the east to recurring invasions of nomadic tribes and mountain peoples which brought new ethnic groups, languages and cultures to the area. A succession of city states and empires rose and fell over the centuries.

During this early period the two civilizations at the opposite ends of the Mediterranean traded and interacted. Geography determined the path which this took. Direct sea trade of course was always possible. However by land trade routes ran along the south but not north, because to go north to go from Egypt to present day Iraq one had to cross the Mediterranean and proceed through the mountainous and hostile area of present Day Greece.

In the South, however, one could proceed across the Negev desert and then through Palestine, present day Israel, Jordan, Lebanon and Syria, usually staying close to the coast and then along the Tigris and Euphrates River valleys rather than directly west through the Syrian Desert. From Memphis in Egypt to what ever empire held power on the upper Euphrates was just less than five hundred miles. The land was quite navigable to the trade caravans, and passed through small countries and tribal areas. The smaller countries were usually allies or protectorates of one the two great civilizations. Which civilization, depended on the constantly shifting relative strength and balance of power between Egypt and the empire holding the eastern Mediterranean.

The analogy to our own times would be that of the countries between Russia and the United States. As political fortunes of the US and Russia have shifted, those countries between us have been pulled in to one orbit or another. In our own lifetimes, we have seen a time in which the US was concerned that Italy might elect a communist government, while today Poland and the Ukraine are considering membership in NATO.

The two great Mediterranean powers not only conducted trade over the land and small countries between them, they also fought wars through it. And, the key to moving trade caravans or armies through these arid lands was water.

During the early Bronze Age, cities and small city states such as Gaza, Jericho, and Damascus grew up around available water. And one such city was Jerusalem.

Archeology suggests Jerusalem was a settlement as early as the fourth Millennium BCE. It was a stopping point on the caravan routes. The source of water for the original site of Jerusalem, the old city or the city of David, was the Gihon Spring. Jerusalem, as a city, is on a mountain and defensible from almost all sides, but the spring, is on the side of the cliff overlooking what is called the Kidron Valley. Since the city walls, if high enough to be defensible, would necessarily leave the Gihon spring outside the city, it would have been without a fresh water supply in case of siege.

To remedy this weakness, during the late Bronze Age, about 1800 BCE, a fairly straight channel aqueduct was dug 20 feet into the ground, and then covered with slabs (further hidden by foliage). This aqueduct led from the spring to the Pool of Siloam, a cistern within the city walls. Slightly later a steep passage was built from the well gate at the top of the oldest part of Jerusalem down to the spring. This passage was for people to travel down and collect water from the spring themselves.

This was the water that continued to supply the city into the first millennium BCE. The early centuries of the first millennium were a time of political conflict in what we now call the Middle East. At its beginning, Assyria was a minor kingdom of northern Mesopotamia, competing for dominance with Babylonia to the south. Beginning in 911 BCE Assyria conducted a series of military campaigns that made it the regional military power and eventually took its soldiers to borders of Egypt.

It did this by revolutionizing warfare. It raised and maintained a standing army. A regular event each spring was the departure of the army for conquest. The main fighting

force of an Assyrian army was the foot soldier, wielding slings and spears, or swords and battleaxes of iron and protected by armor and shields made mainly of leather. But the minorities of specialist troops were also highly effective. They worked as teams.

Archers on foot, with bows as tall as themselves were protected by two companions, one carrying a huge shield and the other a spear. The cavalry operated in pairs; one horseman shooting with a composite bow, while the other protected him with a shield. Two-wheeled chariots carried a driver and an archer, and often with a shield-bearer.

Assyria invented large cavalry squadrons. They made advances in siege craft and transported siege towers and engines within their baggage trains but their greatest advances were in the field of logistics, which enabled them to conduct protracted campaigns. In terms of efficiency of organization, probably no military staff (i.e. administrators, logistic officers and engineers) would reach the proficiency of the Assyrian Army until the Romans, and then, after that, not again until the German general staff of the 1870's.

Few of the small kingdoms around Egypt and Assyria could support large armies. Their defense, in time of war, was to retreat behind fortified walls. Thus the warfare of the time often involved sieges. But, ancient armies were limited in their ability to conduct protracted campaigns, and particularly sieges, by their logistical requirements.

Although the size of ancient armies has been the subject of much debate, it has been estimated that the Assyrian Army at the height of its power consisted of 150,000 to 200,000 men and could deploy field armies of 50,000 men.

The logistical problems of sustaining such armies were considerable. In the climate of the Middle East, a soldier would need 3,400 calories a day and 70 grams of protein to sustain him in active marching and campaigning. In addition he would require about 9 quarts of water. For a 50,000 man army this would mean something over 100 thousand gallons of water a day, weighing about 90,000 pounds. The horses would also need water, and an

army of 50,000 probably required 300,000 pounds of feed per day to sustain cavalry, baggage, and transport animals.

At this time supplies were largely transported in Ox drawn carts. Xenophon, a few hundred years after the period we are discussing, recorded that the normal pack load for a single ox-drawn cart in Greek armies was 25 talents, or approximately 1,450 to 1500 pounds. A ration of 3 pounds of wheat per soldier per day (or 150,000 pounds daily for a field army) would require about 100 ox carts to transport. Feed for the animals would require about 200 ox carts and the water for the soldiers (If it was not locally available) 60 ox carts. That is a total of three hundred and sixty ox carts. Under the best of conditions an ox-cart could travel two miles an hour for 5 hours before the animals became exhausted. Moreover, ox-carts generated their own logistical burden. Carts required drivers and, because they needed constant repair, also required a large corps of repairmen. Repairs required tools and lumber, all of which further increased the logistics load of the army.

The Assyrians really invented military logistics. They created a special branch of their logistical system to ensure that the army could secure, breed, train, and deploy large numbers of horses to support their new large cavalry forces. One writer has estimated that this special logistics branch, the *musarkisus*, was able to obtain and process 3,000 horses a month.

Because of the need to manufacture, issue, and repair new iron weapons in large numbers, the production and storage of weapons became a central feature of the army's logistical structure. A weapons room in palace of the Assyrian king Sargon II is said to have contained 200 tons of iron weapons. Similar stores of weapons were located elsewhere throughout the empire.

The introduction by the Assyrians of the horse to military operations allowed a slight increase in logistics capacity, as did their innovation of using the camel as military transport. Five horses could carry the load of a single ox-cart but could move the load at

four miles an hour for 8 hours. Equally important, the horse could move easily over all types of terrain, and five horses required only half the amount of feed as a team of two oxen.

If the military campaign was close to the shores of the Mediterranean, much of the provisions could be brought by boat and off loaded onto ox carts or horses. However, much of the provision of an army in the field came from foraging. When the animals could graze, and water was plentiful, the logistical burden was greatly reduced. Usually when a walled city was besieged, the surrounding villages were over run and provisions taken from them. Obviously, the longer a siege went on, the more acute the problem of feed and provisions for the soldiers became. Yet the Assyrians were able to maintain the siege of Samaria (of which more shortly) for over three years and ended by taking it.

Water was usually not a problem in the field as most besieged cities were located where there were water sources. As long as there were springs or streams of rivers available an army could avail themselves of water. If there were not, it could become a limiting factor in a siege.

Samaria, the besieged city just referred to, had been the Capital of Israel. By the eighth century BCE, the kingdom of David and Solomon had split into two smaller kingdoms, Israel in the north and Judah in the south. In 723 BCE, the Israelis, who had been vassals of the Assyrians, revolted. After a three year war and siege, The Assyrian king, Sargon II took Samaria and deported and resettled the people and replaced them with foreigners. Sargon recorded that he deported 27,290 Israelites. The Bible says they were resettled in Assyria, Mesopotamia and Media. (2 Kings 17:6; 18:11). The new dwellers in Samaria became the Samaritans of whom (understandably) the Hebrews in Judah did not think highly.

At the time of the fall of Israel, the prince and successor to the throne of Judah was a man named Hezekiah. Although as king he paid tribute to the Assyrians, he prudently decided to strengthen the defenses of Jerusalem. He strengthened the walls around Jerusalem, of which we have scriptural history. (2 Chronicles, 32: 5) "he ... built up all the wall that was broken and raised it up to the towers, and another wall without."¹ Archeological evidence supports this, finding indications of repair of the walls at this time. But Hezekiah's major effort was the Tunnel.

Although the aqueduct dug a thousand years before Hezekiah still brought water into the old city, it could be uncovered by besieging forces and its water used by them. Hezekiah had a tunnel built to replace the aqueduct. Carved through solid rock, it brought water from the Gihon spring, to the cistern inside the walls of Jerusalem. Scripture records (2 Kings 20:20) "As for the other events of Hezekiah's reign, all his achievements and how he made the pool and the tunnel by which he brought water into the city..." and (2 Chron. 32:30) "It was Hezekiah who blocked the upper outlet of the Gihon spring and channeled the water down to the west side of the City of David."

The tunnel takes a winding course of 1,777 ft. through the rock. It has approximately a 0.6% gradient, causing water to flow along its length from the spring to the pool, and lies about 40 meters below the old city of Jerusalem. . There are no shafts to the surface to indicate to the diggers their position, and it was dug from both ends meeting in the middle. While there is evidence in the tunnel of some misdirection and false turns, it was an incredible feat. It is a narrow tunnel and while it could be traversed end to end by a lithe teenage gymnast, an NFL fullback could probably not get through it. This tunnel is considered one of the greatest works of water engineering technology in the pre-Classical period. Had it followed a straight line, the length would have been 1070 ft (335m) or 40% shorter. It may be that it was carved following a natural seepage crevice in the rock.

¹ Quotations from the Christian Old Testament or Jewish Tanach are taken from the King James Translation.

It was lost to history for several centuries and rediscovered in 1838 by the American biblical archeologist Edward Robinson and later explored by others.

An inscription in the tunnel was found by a local Arab youth about 1880 and was pillaged. It was recovered and is now in the museum in Istanbul.

The inscription dates the tunnel to Hezekiah and records how the stonecutters, working from either end, met. “While the workmen were still lifting pick to pick each toward his neighbor and while three cubits remained to be cut through, each heard the voice of the other who called his neighbor, since there was a crevice on the rock on the right side. And on the day of the boring through the stone cutters struck, each to meet his fellow pick to pick; and there flowed the waters to the pool for 1200 cubits and 100 cubits was the height of the rock above the heads of the stone cutters.”

The tunnel would prove its worth.

Although a great deal of anti Assyrian feeling existed in Judah following the defeat of Israel to the north, no open break was made with Assyria while Sargon was still on the throne. However in 704 BCE, Sargon was defeated and killed in a battle on the marches of his empire. When Sennacherib, his son, (705-681 BCE) came to the throne, he was faced with rebellion in numerous parts of the Empire, including Babylon, Syria, and Tyre. Egypt committed itself to lend support. Hezekiah, judging it an opportune moment, withheld tribute and joined in the rebellion. He forced Ekron, his western neighbor, to join him and he invaded Philistia, a protectorate of Assyria.

(2 Kings 18:7-8) “And the Lord was with him and he prospered whithersoever he went forth, and he rebelled against the king of Assyria and served him not. He smote the Philistines, even unto Gaza and the borders thereof.”

In 701 BCE Sennacherib reacted predictably. Finishing his campaign in Babylon, he hurled his chariots southward into Palestine. The romantic poet, Lord Byron told of it,

writing his famous opening couplet. “The Assyrian came down like the wolf on the fold, and his cohorts were gleaming in purple and gold;”

The inscriptions of Sennacherib state “As for Hezekiah the Jew, who did not submit to my yoke, forty-six of his strong-walled cities, as well as the small cities in their neighborhood, which were without number by constructing ramparts out of trampled earth and by bringing up battering rams, by the attack of infantry, by tunnels, breaches and axes, I besieged and conquered.

Two hundred thousand one hundred and fifty men, young and old, male and female, horses, mules, asses, camels, oxen and sheep without number I brought out from them, I counted as spoil. Hezekiah I shut up like a caged bird in Jerusalem, his royal city; the walls I fortified against him. Whoever came out of the gates of the city I turned back. His cities which I had plundered I divided from his land ... diminished his territory. Hezekiah himself was overwhelmed by the fear of the awful splendor of my lordship. The Arabians and his other faithful warriors whom, as a defense for Jerusalem his royal city he had brought in, fell into fear.”

The invasion is recorded in a number of contemporary sources. Assyrian records occur on obelisks, stelae, clay and alabaster cylinders, prisms and tablets, and on bronze sheets. Wedge-shaped (cuneiform) inscriptions were supplemented with pictorial representations or reliefs which decorated the main gates of cities and temples and the palace walls of the capital Assyrian cities of Nimrud, Khorsabad and Nineveh. Vast numbers of Assyrian inscriptions and pictorial records have been recovered. Sennacherib's Prism, containing the inscription just quoted, was discovered in the ruins of Nineveh in 1830. It sets out the details of the war that followed Hezekiah's rebellion. Now in the Oriental Institute in Chicago, it dates from about 690 BCE. It is self-serving and almost certainly not completely accurate.

The campaign is also recorded in 2d Kings 18:13. “In the fourteenth year of King Hezekiah, Sennacherib king of Assyria came up against all the fortified cities of Judah and took them”

All the sources agree that Jerusalem, Sennacherib's main objective, was invested while a portion of his army reduced the smaller surrounding towns, supporting themselves as much as possible from captured stores of food and grain.

Classically, Assyrian armies practiced a kind of armed terrorism. Towns that capitulated to the invaders were spared. Those that resisted were made examples of. An inscription from an earlier Assyrian king writing of such a city said "I besieged and conquered the city. I captured many troops alive. I cut off of some their arms and hands. I cut off others their noses, ears and extremities. I gouged out the eyes of many troops. I made one pile of the living and one of heads. I hung their heads on trees around the city. I flayed as many nobles as had rebelled against me and draped their skins over the pile of corpses. I flayed many, right through my land and draped their skins over the walls. I cut off the heads of their fighters and built therewith a tower before the city. I burnt their adolescent boys and girls.

Sennacherib's inscriptions read "I cut their throats like lambs. I made the contents of their gullets and entrails run down upon the wide earth. With the bodies of their warriors I filled the wide plain. Their testicles I cut off, and tore out their privates like the seeds of cucumbers."

Although there is no debate about the invasion, the contemporary sources do not agree on the eventual outcome of the siege of Jerusalem. The Assyrian texts imply Jerusalem surrendered and that Hezekiah gave the Assyrian king large quantities of money as tribute, resulting in the Assyrians victoriously returning home.

Scriptural accounts, the Greek historian Herodotus, the Chaldean historian Berossus, and the Jewish historian Josephus all agree on a different version of what happened.

The Assyrian arm surrounded Jerusalem. Following Assyrian practice, the commander of the attacking forces demanded its surrender. (2d Kings 18:31-34) "Then Rabshakeh stood

and cried out in a loud voice in the Jews' language, and said, Hear ye the words of the great king, the King of Assyria... Beware lest Hezekiah persuade you, saying: the Lord will surely deliver us. Hath any of the gods of the nations delivered his land out of the hand of the king of Assyria? Where are the gods of Amath and Arphad?...have they delivered Samaria out of my hand?"

The response was defiant. (Isaiah 37: 33-34) "thus saith the Lord concerning the King of Assyria, He shall not come into this city, nor shoot an arrow there, nor come before it with shields, nor cast a bank against it...he ...shall not come into this city saith the Lord. (Considering what has been said about Assyrian Treatment of captured cities, this response required a considerable amount of faith.)

Scripture goes on to say that Sennacherib did not take the city. (Isaiah 37: 36-37.)

For "Then the angel of the lord went forth , and smote In the camp of the Assyrians a hundred and fourscore and five thousand: and when they arose early in the morning, behold, they were all dead corpses. "

What had happened? The reaction of the inhabitants of Jerusalem was that God had delivered them. I suggest that the mechanism of their deliverance was disease. For as the Assyrians approached the city, Hezekiah, in addition to all his other preparations, sought to deny to the Assyrians water, of which he was assured.(2 Chronicles 32: 2-4)

"And when Hezekiah saw that Sennacherib was come, and that he was purposed to fight against Jerusalem, he took counsel with his princes and his mighty men to stop the waters of the fountains which were without the city: and they did help him. So there was gathered much people together, who stopped all the fountains, and the brook that ran through the middle of the land, saying, Why should the kings of Assyria come, and find much water?"

I suggest that in addition to all else that was done, the defenders poisoned with animal carcasses and human excrement. One does not need to know the germ theory of disease

to be aware of the effect of dumping waste in waterholes. This is a war time measure often seen in primitive desert cultures.

What was the disease outbreak- probably typhoid fever. Some historians have speculated that it was plague. This has been inferred from a statement of Herodotus writing of mice and rats. But the scriptural reference talks of a sudden and massive outbreak. Plague spreads from person to person and takes time to build into a massive epidemic. If the sickness occurred all at once it was almost certainly acquired from contaminated water. Cholera has been suggested. Typhoid fever is more likely. Some of the population of the Jerusalem could have been carriers so that using human waste to contaminate the few water sources which the Assyrians could find outside the city would have spread the disease. In a similar siege situation, a few hundred years later in the time of Thucydides, there is a direct reference to a deliberate contamination of the attackers' water supply. In recent archeological work done at that site, teeth were taken from an ancient Greek burial pit from the time of that siege. A DNA study on those teeth, led by a professor (Manolis Papagrigrakis) of the University of Athens, found DNA sequences similar to those of the organism that causes typhoid fever.

Whatever the disease, scripture records that the siege ended and "Sennacherib king of Assyria departed, and dwelt at Nineveh." (Isaiah 37: 36-37.)

The events of this military campaign have been debated by historians. The dates have been argued about and there is no archeological evidence of mass Assyrian burials outside Jerusalem. But Sennacherib's claim that Jerusalem surrendered and paid tribute is almost certainly the result of a reluctance to admit defeat. Some of the reliefs in Sennacherib's palace at Nineveh even state that the Assyrians never lost a battle.

There is also no archeological evidence of the kind of destruction Sennacherib would have wrought on a conquered Jerusalem. But most of all, from scripture it is clear that

the inhabitants of Jerusalem and Judah believed that God had delivered them. And, no mere surrender and payment of tribute would have inspired such a belief.

Their belief was critical to our history. The Hebrews not only believed that God had delivered them but that he would continue to do so as long as they kept the commandments. And this faith preserved the existence of their religion.

When Samaria was conquered, and Israel destroyed 30 years earlier, the inhabitants who were carried off became the ten lost tribes of Israel. For them their religion had failed.

Their God hadn't beaten the Assyrian gods so the Assyrian gods were stronger and bigger and the ten tribes abandoned their faith. It would seem, at that time, among Gods anyway, size mattered. The ten tribes and their fate have been the subject of much conjecture.

But, whatever the conjecture, they and their faith disappeared from history. Had Jerusalem fallen it is quite likely that the Hebrews in Judah would also have lost faith (Those that Sennacherib left alive)

Instead their faith was sustained and when two centuries later they were carried off into captivity in Babylon, they retained their faith. They attributed that captivity as a sign they had again fallen into error but kept the belief that if they followed God's commandments He, would ultimately return them to Zion city. When they returned to Jerusalem after the Babylonian Captivity, the religion had fully evolved into Judaism.

Our world, without Judaism, Christianity and Islam would be unrecognizable. Nor is it safe to say some other religions would have substantially filled their place. For the Jews besieged in Jerusalem were the carriers of monotheism.

Monotheism leads, in science, to a belief that the universe is orderly and consistent and can be studied. A single god implies a single set of rules. In ethics and government it leads to the concept of equality, and the idea that all people are subject to the same moral code, and obligations.

All this history depending, perhaps on an ancient engineering project that brought clean water through a tunnel.

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