

*STUDIES IN THE HISTORY AND TOPOGRAPHY
OF JERUSALEM.*

III.

THE WATERS.

IN the general description of the City, which formed the first of these Studies,¹ some account was given of the hydrography of Jerusalem. But before we begin the story of the City's growth, a more detailed examination is necessary of the water-supply of so remarkable a site, not only that we may understand the character of the latter and its capacity for sustaining a large population, but that we may have also before us the data of some of the most critical problems of the topography and history. Nowhere so much as in the East do such problems depend on the exact position and constancy of the water-sources; but in the case of Jerusalem the meagreness of the latter enhances their topographical importance to a degree unusual even in the Orient.

The natural causes which affect the water-supply of Jerusalem are four: three which may be regarded as constant—the average annual rainfall,² the height at which the City stands, the geological constitution of the site; and one which introduces a considerable element of uncertainty—the earthquakes that have so frequently rocked the foundations of the City. It is strange that this last has been so much ignored by writers on the topography of Jerusalem—although both the Bible and Josephus contain hints of its significance for the questions we are treating—and how in consequence these questions have often been answered with

¹ *EXPOSITOR* for January 1903.

² Various attempts have been made to prove that the annual rainfall in Palestine was in ancient times much greater than it is to-day, but none of these can be said to have been successful. The main causes of rain at Jerusalem—viz., the position of the range, on which the City stands, relatively to the sea, and the prevailing winds—are what they always were, and we saw that the distribution of trees about Jerusalem can never have been very different from what it is to-day (*EXPOSITOR*, January 1903).

a dogmatism which the merest recollection of the earthquakes ought to have rendered impossible.

1. We have seen that the average annual rainfall about Jerusalem is considerable—as much as twenty-five inches, or about that of London—but that it falls in winter only, and leaves a long summer drought.

2. This rainfall happens upon a large basin, some two-and-a-half miles square, which lies upon what is virtually the summit of a mountain-range. The lowest levels of the basin are about 2,000, and its highest edges from 2,600 to 2,700 feet above the sea. The principal hollows by which it is drained—the *Ḳidrōn*, the *Wady er Rabāby* and the small intervening valley once known as the *Tyropoeon*—run round or through the City's site, joining below its south-east angle upon the basin's one outlet towards the Dead Sea. The City is therefore situated where any water that falls in the basin and remains upon the surface must gather before leaving it. Here then is one of the greater reasons why Jerusalem stands where she does. So large a population as has generally filled her would have been impossible anywhere else on this part of the range. But while enough water falls within the basin to sustain so great a city, the limits, the height, and the somewhat rapid slope of the basin towards its single outlet forbid the formation of either a river or a lake.

3. But the want of streams and natural pools about Jerusalem is not fully accounted for till we take into consideration the geology of the district. This, as we have seen, consists of strata of limestone of various degrees of softness and porosity.¹ First, as on the top of Olivet, there are patches of the soft upper chalk, known locally as "*kakūli*." Below this lies a harder reddish and grey limestone, "*Mezzeh*," with strips of flint, of which much of the surface of the City's site is composed. Then comes a

¹ For the material in the following sentences I am indebted to descriptions by Major-General Wilson and Colonel Conder.

bed, some thirty-five feet thick, of "Meleki"—a limestone so soft that it can be cut with a knife, but hardening to exposure; in this have been hewn the quarries, cisterns and aqueducts immediately under the City. And below it there is a hard dolomitic limestone, which comes near the surface only in the bed of the Wady Abu Nār, between Jerusalem and the Mount of Olives.

These are the full reasons why neither lake nor stream has ever blessed the neighbourhood of the Holy City. Pools formed by the winter rains quickly disappear,¹ and there are but one or two small transient swamps.² Except for a brief interval after heavy downbursts of rain, water does not run above ground outside the Wady Abu Nār. It is in the latter therefore that we must seek—at a depth some thirty feet below, and 240 feet to the west of the present bed—the only stream of the district of which we read in the Bible and Josephus. This is called *the brook which flows in the midst of the land*,³ *the brook* "par excellence,"⁴ and *the brook Kīdrōn*.⁵ The name brook (Hebrew "nahal," Greek χείμαρρος) signifies a mere winter stream, dry in summer. That it sometimes came down in great force is proved by the verb "shōtēph," *rushing, flooding*, which is applied to it in 2 Chronicles xxxii. 3. In the present day the most of its waters disappear immediately east of the City under the rubbish with which the valley is choked; but lower down, beyond the Bir Eiyūb, they flow in a considerable stream for several days after the heavy rains of spring.⁶

¹ Schick mentions one which lies every winter for a few weeks near the Nablus Road on the north of the City. *P.E.F.Q.*, 1892, 9.

² See p. 12.

³ 2 Chron. xxxii. 3.

⁴ 2 Chron. xxxiii. 14; Neh. ii. 15.

⁵ קִדְרוֹן. 2 Sam. xv. 23; 1 Kings xv. 13; 2 Kings xxiii. 6, 12; Jer. xxxi. 40; 2 Chron. xv. 16, xxix. 16, xxx. 14; Κεδρών John xviii. 1; Josephus VIII. *Ant.* i. 5.

⁶ Thomson, *Land and Book*, 659, 'gushing out like a millstream.' *P.E.F. Mem.*, "Jerus." 371. Masterman, *Biblical World*, 1902, 89 f.

As for fountains, it is evident that in such a basin these are not probable except where the lowest of the four strata, the hard dolomitic limestone, comes near the surface. We must look for them therefore in this same *Ḳidrōn Valley*, or possibly also in the natural grooves which in ancient times descended into it from the City. Everywhere else the porous strata prevail, and lie deep below the surface; there appears to be no hard rock to throw up the subterranean waters to the light. It is true that both in ancient times and within recent years rumours have risen of the existence of fountains outside the *Ḳidrōn Valley*. The so-called "Letter of Aristeas" states that the Temple had an inexhaustible supply of water not only in its wonderful cisterns, but from a copious natural spring, within itself.¹ Tacitus² speaks of a "fons perennis aquae," apparently also within the Temple. Robinson³ and others⁴ have placed the spring *Gihon* on the west of the City by the head of the *W. er Rabāby*. Others⁵ have sought for *Gihon* on the north, and have taken the aqueduct which runs from the *Damascus Gate* towards the Temple area as a channel for its waters; while Pierotti⁶ calls the *Ḥammām esh Shefā*, the large cistern in the *Tyropoeon* to the west of the Temple, "a spring." But the statements of the "Letter of Aristeas" and of Tacitus are probably inversions of the prophecy that a fountain of living water would issue from the Sanctuary; we shall see that *Gihon* is to be found in the *Ḳidrōn Valley*; and a careful examination of the *Ḥammām esh Shefā* proves it to be a mere reservoir for the surface-waters and percolations immediately below the surface, and no true spring.⁷

But, indeed, all efforts to find fountains in the City, or

¹ See Thackeray's edition in Swete's *Introd. to the O.T. in Greek*, p. 535.

² *Hist.* v. 12.

³ *B.R.*, i. 323-329; *L.B.R.*, 243 ff.

⁴ E.g. Schultz.

⁵ E.g. *Holy City*, ii. 474.

⁶ *Jerusalem Explored*, p. 15.

⁷ So Dr. Chaplin reports *P.E.F.Mem.* "Jerusalem," 262 ff.

round its northern and western sides, may be given up, not only because of the geology already described, but in face of the extraordinary provision made in the City for collecting rain and surface water—both the multitudinous remains of ancient aqueducts and cisterns, and the usage of the present population.

Nothing of ancient Jerusalem has been so well preserved as her reservoirs, cisterns and conduits; and among all her remains nothing is so impressive as those vast and intricate monuments from every stage of her history.

The first of them which strike the eye are the great tanks round and within the city,¹ the Pool of the Sultan, the

¹ 1. Birket es Sultān in the W. er Rabāby beneath the western city-wall and the road to Bethlehem, which crosses the Wady on the south of the Pool: 555 × 220 feet; but as Masterman (*Bibl. World*, 1902, 102) says, "the enclosed area probably never was a pool, but the greater part was a collecting ground for a large rock-cut cistern at the lower end." The construction has been assigned to the German Knights in 1170 A.D.: and, for a time, the pool was called 'the German,' after them, but its present name is due to the Sultan Süleiman ibn Selim (in the middle of the 16th cent.) who repaired it. It may however be very much older. Benzinger even suggests an ancient Jewish origin (*Bädeker's Palästina*, 4th ed. 103).

2. To the N. W. of this at the head of the W. er Rabāby is the Birket Mamilla: 292 × 193 × 19½ feet. The origin and age are unknown. It seems rather far from the city walls to be the pool mentioned in Isa. vii. 3, xxxvi. 2 (2 Kings xviii. 17). Without sufficient reason some take it to be the Serpent Pool of Josephus, V. *B.J.* iii. 2.

3. Within the city and connected with the Mamilla Pool by an aqueduct is the Birket Hammām el Batrak, or Pool of the Patriarch's Bath. This is the Amygdalon (i.e. בְּרִיכַת מְגֵדֹלִיָּן, Pool of the Towers) of Josephus V. *B.J.*, xi. 4. How much older than his date it may be, is unknown. It has long been called Hezekiah's Pool, but there is no evidence for or against this assumption.

On the north of the Temple area, within the old ditch that used to protect this, are a series of pools:—

4. The Twin Pools near Antonia: 165 × 20 and 127 × 20: arched over (see *P.E.F. Mem.* "Jerus." 209 ff.; (cf. 295 and plan, p. 265) identified by Clermont Ganneau with the Strouthion of Josephus V. *B.J.* xi. 4. M. Clermont Ganneau thinks the pools were roofed during the period of Aelia Capitolina. They are held to be the Twin Pools which Eusebius and other early Christian writers identified with Bethesda.

5. In the east of the ancient ditch—the Birket Isra'in: 360 × 124 × 69 ft. below the level of the Temple area; identified since 12th century with Bethesda.

6. A little to the north of this and close to, on the west, the Church of St. Anne, is another pool cut out of rock on at least two sides, with a sluice for

Pool Mamilla, Wady er Rabāby; Amygdalon or Hezekiah's Pool, the Twin Pools, the Birket Israel, and the vaulted Pool by the Church of St. Anne, within the city; the Pool of our Lady's Bath close to St. Stephen's gate; and the two Pools of Siloam, besides others outside the City to the north. For number and size the like of these great tanks, all of them either now or once above ground, are found in no other city of Palestine. Then there are the great series of thirty-seven reservoirs beneath the site of the Temple.¹ caverns large and small, hewn from the living rock, 30, 40, 50, and 60 feet deep—one of them, "the Great Sea," with a capacity of two million gallons—carefully cemented, "the roofs of rock cut into arches" and occasionally supported by heavy piers of masonry, but sometimes formed of flat stones; with passages for inspection and conduits for draining the water at various levels.² Beneath the rest of the City there are the public reservoirs like the Ḥammām Shefā, once perhaps a surface pool, whose walls as the rubbish rose through various generations were heightened yard by yard and finally roofed over; and the numberless domestic cisterns. The modern excavator may be said to come upon these everywhere in rubbish of all possible ages or in the rock. On Ophel Dr. Guthe uncovered a great number.³ To the north of the city again the Survey plan is dotted with the name "cistern,"⁴ and here too they are of all styles and possible origins. Two large ones near

emptying it, and above part of it vaults on which rest two Christian (crusading) churches one above the other. *P.E.F.Q.* 1901, 163.

7. A little to the E.N.E. of this, outside the city-wall, is the Pool of Lady Mary's Bath. Birket Ḥammām Sitti Miriam, 95 × 75 × 13.

Besides these, other pools have recently been discovered on the north of the city: e.g. one in the W. el Jōz. *P.E.F.Q.* 1892, 9 ff., and another mentioned *id.* 289; and on Ophel, *ZDPV.* 333 f.

The Siloah Pools, as depending on spring water, will be afterwards noted.

¹ Described by Colonel Conder in detail in *P.E.F.Mem.* "Jerus." 217.

² *Id.* 162, 165.

³ *ZDPV.* v. 336, and Tafel viii.

⁴ See especially Schick's plan, opposite p. 9. of *P.E.F.Q.* 1890.

Jeremiah's Grotto, outside the Damascus gate, were excavated by Dr. Schick—one not older than the Christian period, but the other assigned by him to the Canaanites.¹

In communication with the tanks, temple-caverns and public cisterns there spread an intricate system of conduits and channels, also of various dates, and on different levels of the City's growth. Of these the principal were the aqueduct from near the Damascus Gate to the Twin Pools, and probably at an earlier time to the Temple reservoirs²; the channels from the latter towards the Kīdrōn Valley,³ Jewish, Byzantine and Arab; the aqueducts down the Tyropoeon, for public use by means of holes above them, through which buckets were lowered⁴; the conduit from the Mamilla Pool to Amygdalon; and the two great aqueducts, "the high" and "the low level," which brought water to the City from Solomon's Pools beyond Bethlehem.⁵ There are also traces of an ancient aqueduct along the great north road to Bethel, by which water may have been led to the City from the wells of Bireh.⁶

Than these innumerable tanks, reservoirs, cisterns, and conduits, ancient Jerusalem has left no more conspicuous evidence of the habits of her life; and what do they prove? Dating, as they do, from all periods of the history—repeated, altered, and replacing each other on different levels of the gradually rising surface of the city—they prove to us very distinctly that in the main the people of Jerusalem have always depended for their water upon the gathering and storage of the rains and surface percolations, while some more enterprising generations have introduced by aqueducts spring water from a great distance. The

¹ *Id.* pp. 11 f., with plans.

² *P.E.F.Mem.* "Jerus." 265, with plan.

³ See above, p. 213.

⁴ *P.E.F.Mem.* "Jerus." 183.

⁵ Their courses with the extension to the W. el 'Arrūb have been fully described by Dr. Schick in *ZPDV.* 1878, 1 "Die Wasserversorgung der Stadt Jerus.," and by Dr. Masterman in the *Biblical World*, 1902, 101 ff.

⁶ Dr. Schick in *P.E.F.Q.* 1901, pp. 3 f.

patience, the labour, the skill which these vast remains exhibit are eloquent of one unvarying need and purpose through the ages. And all this is confirmed by the usage of the present population. To-day virtually all the houses within the city have cisterns, fed from the rain that falls on their vaulted roofs¹ or trickles through their surroundings. In the new town to the north and north-east no house of any size is built without such a cistern. A hotel-keeper in that quarter told me during the drought of 1901, that he had stored water sufficient for all his purposes for three years! Nothing then could be more clear than that in all ages the inhabitants of Jerusalem have relied for their water *mainly* on the rain, the surface percolations and supplies introduced from springs at a distance.

Having now these facts clear, we may proceed to the spring or springs, which, as we have seen, are to be expected only in the Kīdrōn Valley.

Here there still flows at least one real fountain. It is that known as the 'Ain Sitti Miriam, or Virgin's Spring, and the 'Ain Umm Derraj, or Spring of the Steps, which lead down to it from the present bed of the valley. The steps are in two flights, the upper of sixteen ending in a landing under a vault, and the lower of fourteen ending under an overhanging rock or cave, and projecting seven feet over a rocky basin, thirty feet long by eight broad, filled from a source in its centre. During the summer of 1901, in consequence of a diminution of the water, the municipality of Jerusalem had the basin cleared of a large accumulation of rubbish. At the invitation of Yusuf Pasha I had the opportunity of accompanying him and Dr. Schick

¹ That in earlier times the roofs were not all (at least) of stone is proved by the discovery during an excavation in the Tyropoeon (*P.E.F. Mem.* "Jerus." 182 f.) of one of the stone rollers commonly used in Palestine for keeping hard and close the clay-covered timber roofs. This may also be taken as a bit of evidence that in ancient times there was more timber procurable near Jerusalem than is possible to-day. See *Expositor* for January, p. 13.

on a visit to the well, the results of which are described by Dr. Schick in the *Palestine Fund Quarterly* for last year.¹ About six feet west of the lowest step is the opening of the source, a hole in the rock, apparently natural and about a foot wide. As is well known, the flow of water is intermittent and due to a natural syphon below: three to five times a day during the rainy season, but during the long drought twice, and later less than once. The cliff above projects eastward over the lower flight of stairs about seventeen feet from the source. The basin, thus lying under the rocky roof, appears to be the original pool of the spring, and its overflow must at first have passed directly eastward into the bed of the Naḥal Kīdrōn, but Dr. Schick supposes that at some time there was another and larger pool in the valley, south of the present mosque. From this uncertainty we may turn to other provisions for leading and storing the water of this famous spring, for they are certain and of great historical interest.

Some years ago Dr. Schick discovered an aqueduct leading north from the lower pool of Siloam up the edge of the Kīdrōn Valley towards the Virgin's Well,² which he believed might be found to start on the landing between the two flights of steps. Here in 1901 a shaft was sunk, and the entrance opened to a conduit running south on the edge of the valley towards the Lower Pool of Siloam. This was examined by Messrs. Hornstein and Masterman for a distance of 176 feet and found to be partly excavated in the rock and partly built with rough stones.³ Whether it is actually the upper end of Dr. Schick's aqueduct is not yet certain; but in any case the existence of a conduit leading from the Virgin's Well southwards in the direction of the Lower Pool of Siloam is put beyond all doubt by Dr. Masterman's exploration.

This aqueduct led along the edge of the valley bed and

¹ *P.E.F.Q.* 1902, p. 29.

² *P.E.F.Q.* 1891, 13 ff.; cf. 1886, 197 ff.

³ *P.E.F.Q.* 1902.

on or near the surface of the ground. But there is another conduit from the Virgin's Spring to the *Upper Pool of Siloam*, cut through the rock of the ridge of Ophel. We need not go into the details of this famous tunnel. It is enough to remind ourselves of its length, 1,706 feet; of the winding course which it follows; of the immense labour needed in its execution; and of the ancient inscription found upon it, relating how it was excavated from both ends by two parties of workmen. At the end of the serpentine tunnel from which this Siloam aqueduct properly starts, and about ninety feet from the actual opening, Sir Charles Warren discovered a perpendicular shaft forty-four feet high, continued by a series of sloping passages that issue in a vault three quarters of the way up Ophel and due west from the Virgin's Spring.

To all these passages we must return afterwards. In the meantime it is enough to say that it seems probable that the earliest conduit was the one along the edge of the valley to the Lower Pool of Siloam, and that when it was found to be too open to besiegers of the city, the tunnel (and perhaps at the same time¹ the shaft) was made in order to bring the waters of the spring within the walls.

The two pools of Siloam, to which these aqueducts lead, lie in the mouth of the Tyropoeon. The upper one the *Birket Silwān*, in which the water issuing from the tunnel is known as the 'Ain Selwān, was originally, according to Dr. Bliss, about fifty feet square; from Roman times onward it has been so built upon that the present pool is an oblong of some fifty by fifteen feet.² Its position, within one of the ancient walls of the city, makes

¹ Or perhaps earlier.

² *Excavations at Jerusalem, 1894-1897*, by Bliss and Dickie. Guthe (*ZDPV*, v. 59 ff.; 355 ff., with Tafel ii.) reports the discovery of a pool a few feet to the N.E. of the present *Birket Silwān*, but this does not appear in the report or plans of Bliss and Dickie; what Guthe found seems to be the N.E. corner and E. wall of the original pool of Siloam.

it probable that it is younger than the Lower Pool, which indeed is generally called the Old Pool.¹ This is fifty-two feet square. The two pools were connected by a rock-cut channel; and from the lower another conduit led to the Bir Eiyüb, nearly 1,000 feet down the Kıdrön Valley.

The Bir Eiyüb is a great well 125 feet deep; the water in which has almost never been known to fail, and can be drawn upon all the year around.² It is from an overflow near this well³ that the stream spoken of above⁴ breaks down the valley for a few days after the latter rains. Whether we have here only the gathering of the surface-water or a true spring, and whether the well existed in ancient times are questions very difficult to solve. Towards the answer of the first it may be noted that the quality of the water in the Bir Eiyüb is distinctly better than that of the Virgin's Spring. It cannot therefore be wholly due to the overflow of the latter or to percolation from the surface, which undoubtedly contribute to it,⁵ but may have besides a deep natural source still undiscovered. We might even expect a spring to issue on the eastern edge of the Kıdrön Valley, for the Mount of Olives above this must receive annually an immense quantity of water, which after sinking through the porous strata would find its most natural outlet here. Sir Charles Warren discovered an unfinished aqueduct leading down the valley near the well, but of what date it is impossible to say.

Before we seek to identify the pools, conduits and

¹ In Arabic the Birket el Hamra.

² "In the height of a particularly dry summer I have known of a hundred and twenty animals—donkeys, mules, and horses—being employed night and day carrying goatskins of water (two or three to each animal) up to Jerusalem. On an average every animal made four or five journeys within the twenty-four hours. In addition great quantities of water were taken locally—for Silwān and for the vegetable gardens near the well."—Masterman, *Bibl. World*, 1902, 89.

³ *P.E.F.Mem.*, "Jerus." 371. ⁴ p. 210.

⁵ Sir Charles Wilson says (*P.E.F.Mem.*, "Jerus." 371): "The supply is directly dependent on the rainfall"; but this seems true only of the overflow at the rainy season.

fountains just described with any of those mentioned in the Bible and Josephus, we have to consider what degree of uncertainty is imparted to the whole question by the fourth of the natural causes which we quoted as affecting the water supply of Jerusalem: the earthquakes.

To the mountain-range on which Jerusalem stands earthquakes do not extend with the same frequency or violence with which they have disturbed the shores of the Dead Sea, the shores of the Lake of Galilee, and other volcanic districts of Palestine. Nevertheless (as we saw in the first of our Studies), Jerusalem, besides being visited at irregular periods by fits and starts of earthquake, has suffered several convulsions of disastrous magnitude.¹ One of these happened in King Uzziah's reign; while another devastated Judæa under Herod the Great.² The tremors of the former are visible in the prophetic writings of the eighth century,³ and its memory lasted into the Christian era. The description by Josephus,⁴ whether applicable or not to this particular convulsion, is evidence of the ruin which some earthquake had effected upon the site of Jerusalem. "Before," that is, to the east of, "the city, at what is called *Erōgē*,⁵ half the mountain broke off from the remainder on the west, and rolling four furlongs came to a stand at the eastern mountain, till the roads as well as the king's gardens were blocked up." That is to say, a large piece of the Temple Hill (or of the ridge of Ophel) was sundered from the rest and rolled down and across the *Ḳidrōn* Valley till it was stopped by the foot of Olivet. Josephus wrote more than eight hundred years after the earthquake under Uzziah, but the magnitude of a convulsion which could be remembered so long is thereby only the more emphasized. From the details which Josephus gives it is clear that either

¹ EXPOSITOR, 1903, p. 3, n. 1.

² Josephus, XV. *Ant.* v. 2.

³ Amos iv. 11, viii. 8; Isaiah ix. 9.

⁴ IX. *Ant.* x. 4.

⁵ Πρὸς τῆ καλονμένην Ἐρωγῆ (or Ἐρρωγῆ).

Uzziah's earthquake or some other had caused a havoc, the traces of which were visible in his day. Taking his evidence along with the other records we possess of the liability of Jerusalem to earthquakes, we may conclude that the Kīdrōn Valley, the part of the district in which (as we have seen) springs may be most naturally looked for, has suffered from geological disturbances of considerable severity.

In order to estimate how far these may have affected the number and disposition of the ancient springs, I have consulted the eminent geologist, Sir Archibald Geikie, and the following is his answer: "The question you ask me is one to which no confident reply either way can be given. On the one hand it is well known that springs are sometimes seriously affected by earthquakes, being closed up or opening out from new vents in the rocks underneath. On the other hand it is equally certain that even after violent earthquakes old springs may continue to maintain their old exits. Of this persistence we have a good example in the Roman Forum. The Fons Juturnae, at which Castor and Pollux watered their horses when they came to announce the victory of Lake Regillus, is still flowing, and has recently been laid open once more to light by the removal of the church, etc., built over it. Yet during the last 2,000 years Rome has been visited by many earthquakes, some of them severe enough to shake down buildings and do much damage.

"I do not think much stress can be laid on the position of the Jerusalem spring. It *may* have maintained its position in spite of all the earthquakes, but on the other hand it *may* have had its passage opened for it within historic time, and other springs may have existed which have had their passages closed up. Of course a close study of the ground might enable a geological expert to express an opinion a little more definitely in one direction or the other, but I hardly think he would feel himself justified in expressing any confidence either way."

It is evident, therefore, that in attempting to identify

the present spring or springs in the Kīdrōn Valley with those of history, as well as in estimating how numerous the latter may have been, we must be content to leave a large margin of uncertainty.

Some facts, however, are clear. The aqueduct,¹ tunnel and shaft, leading from the Virgin's Spring, prove that when they were executed the Spring was already a considerable source of living water. The famous inscription, describing the excavation of the tunnel, is almost certainly of the eighth century B.C., when great public works were executed by, at least three kings, Uzziah, Jotham and Hezekiah; and the aqueduct (as we have seen) is probably older than the tunnel. We may, therefore, assume that the Virgin's Spring is as old as,² if not older than, the eighth century. Again, the pool into which the tunnel flows, the higher of the two present pools in the mouth of the Tyropoeon Valley, the Birket Silwān, must be at least as old as the tunnel, because the inscription says that when the tunnel was finished, the waters flowed from the exit into the pool. But it may have been older, and if so must have been previously used to collect the surface-water and percolations of what was afterwards known as the Tyropoeon.

To this water-system, in the Kīdrōn Valley and at the mouth of the Tyropoeon, the earliest contemporary reference is found in the Book of Isaiah viii. 6: *Forasmuch as this people despises the waters of the Shiloah, which flow softly and . . .*³ *therefore, lo, the Lord will bring up against them the waters of the River, the Euphrates.* No one doubts that the Shiloah (or according to another ancient spelling Shilloah),⁴ which (a passive form) means *the sent*

¹ Schick's and Masterman's.

² There is always the possibility that it first found its present exit in the earthquake of Uzziah; and that its appearance here was the occasion of the making of the aqueduct and tunnel. But, as we shall presently see, we have evidence of its still earlier existence.

³ This clause is uncertain. See Cheyne in *S.B.O.T.* and Marti's commentary.

⁴ So the *Cod. Babyl.*, the Complut. Bible and other early edd. This reading is accepted by Baer.

or *conducted*, applies to the water-system in or about the mouth of of the Tyropoeon, where the name has always been at home. In Josephus Siloa or Siloam, when used with the feminine article,¹ is a copious spring of sweet water, obviously the present issue of water from the tunnel into the Birket Silwān and known to the Arabs as 'Ain Silwān.

But Josephus also uses Siloa with the masculine article² which has been held to mean the district³ of Siloa, and this is the sense in which Dr. Guthe⁴ interprets the Shiloah of Isaiah viii. 3. *The waters of the Shiloah which go softly* would accordingly mean all the water, artificially controlled and led, about the mouth of the Tyropoeon, in order to irrigate the gardens in the Kīdrōn Valley. But whether we put this, or a more particular, meaning upon the name, The Shiloah, the latter implies the existence in Isaiah's day of a conduit or conduits; and these may have been either the older conduit⁵ leading from the Virgin's Spring, or else the rock-cut channel connecting the Birket Silwan with the Birket Hamra, and continued into the Kīdrōn Valley. The latter suits *the conduit of the upper pool towards the highway of the fuller's field* mentioned in another passage of the same date: Isaiah vii. 3.⁶ A gloss to Isaiah xxii., verses 9b-11a, records in addition *the lower pool and a reservoir between the two walls for the waters of the old pool.*⁷

We may, then, conclude that in the reign of Ahaz the

¹ ἡ Σιλωάμ (so in Niese's text: though some MSS. have Σιλωαμ), V. B.J. iv. 1-2 vi. 1; ix. 4. VI. B.J. viii. 5. ἡ Σιλωάμ, V. B.J. xii. 2.

² Μεχρὶ τοῦ Σιλωά (Niese: some MSS. Σιλωάμ) II. B.J. xvi. 2; VI. B.J. vii. 2.

³ Sc. χωρὸς: cf. Guthe, Z.D.P.V. V. 359 ff. The masculine article is also used in the N.T. with the form Σιλωάμ: Luke xiii. 4; John ix. 7. The form Σειλωάμ or Σιλωάμ is that used in the LXX. of Isaiah viii. 3: though some codd. read Σιλωά.

⁴ See previous note.

⁵ Schick's and Masterman's.

⁶ Stade, Marti, etc., identify *the upper pool* of Isaiah vii. 3 with the pool which Guthe (Z.D.P.V. V. 271 ff.) claims to have discovered a few feet to the N.E. of the Birket Silwān; but, as we have seen, this pool, supposed by him to be separate, is probably part of the wider ancient pool, which extended on both sides of the present Birket Silwān.

⁷ For evidence that these verses do not belong to the original discourse of Isaiah in chap. xxii., see Cheyne in S.B.O.T. and Marti's commentary.

two pools on the mouth of the Tyropoeon were already in existence; that *the conduit of the upper pool* was the present rock-cut channel leading into the Kīdrōn Valley from the Birket Silwān. These were probably parts of a wider system of irrigation, which was known as The Shiloah. In any case we have no evidence for confining this name to either the tunnel from the Virgin's Spring (which perhaps did not exist in the reign of Ahaz), or to the older aqueduct from the same source along the foot of Ophel. Nehemiah mentions, as immediately north of the Fountain Gate, *the pool of the Shelah* (? aqueduct) (iii. 15), one of the two in the mouth of the Tyropoeon¹; *the king's pool* (ii. 14), one of the same; and *the made, or artificial, pool* (iii. 16), which lay to the north of *the pool of the Shelah*, that is, nearer Giḥōn, and may have derived its name from being the earliest artificial pool in the district. Where the *old pool* was, the present data do not enable us to determine.

We have seen that the tunnel to the Birket Silwan may have been made by Hezekiah, who, according to 2 Kings xx. 20, made a pool and a conduit and brought the waters to the city. This was indeed the tradition in the time of the Chronicler,² whatever be the date of his sources. *And he, Hezekiah, sealed the issue of the waters of Giḥōn, the upper, and directed them down, westwards, to the city of David*³; *he built an outer wall to the city of David, west of Giḥōn in the Naḥal* (i.e. the Kīdrōn Valley) *to the entry of the Fish-Gate, and he surrounded Ophel, the ridge between Kīdrōn and the Tyropoeon, and made it, the wall, very high.*⁴ Another passage explains Hezekiah's purpose: *much people were gathered, and they sealed all the springs and the Naḥal flowing through the midst of the land, saying, why should the kings of Assyria come and find much water?*⁵ The geology leads us to look for springs

¹ But see Guthe, *Z.D.P.V.* V. 3716.

² Circa 300 B.C.

³ 2 Chron. xxxii. 30.

⁴ 2 Chron. xxxiii. 14.

⁵ 2 Chron. xxxii. 3.

within the *Ḳidrōn Valley*; this is indeed expressly named—the *Naḥal*—in these passages of the Chronicler: and the references to *Gihōn* suit the present *Virgin's Spring*; for a wall, to be of use to the besieged, must have run to the west of this on the slopes of *Ophel*, while the present tunnel would direct the waters to within the city. Those, therefore, are right who identify *Gihōn*, *the powerer*, with the *Virgin's Spring*. That it is called *the upper issue of Gihōn* may be due to the fact that in the Chronicler's day water issuing from the other end of the tunnel into the present *Birket Silwān* was known as the *lower Gihōn*. That several springs are mentioned (Josephus also affirms a plurality of springs in the *Ḳidrōn Valley*)¹ where only one is now found may be accounted for by possible changes made by earthquakes in the bed of the valley, or by the accumulation of *débris*. If the latter be the only cause of their disappearance, they may yet be recovered either above or within the *Bir Eiyūb*; but it is quite as possible that their ancient vents have been closed by earthquakes.

Of *Gihōn* we also hear as early as the reign of David. The King sent his son to be crowned *in*, that is *beside*, *Gihōn*.² This proves the latter to have been by David's time a sacred and therefore an ancient spring. We have thus every reason to believe it to be the original well of the City.

We now turn to the other name for a fountain in this neighbourhood: *En-Rogel*. This is usually rendered *Fuller's Spring*, but *Rogel* is not the Hebrew for *fuller*, and a more probable meaning is suggested by the Syriac *rogūlo*, *current* or *stream*.³ *En-Rogel* was either the *Virgin's*

¹ V. *B.J.* ix. 4.

² 1 Kings i. 33, 38. 45. *יְנִיחֶנּוּ* The Hebrew preposition means *in*, but that with the name of a well it may be used for *beside* is proved from 1 Sam. xxix. 1; the Israelites pitched *יְנִיחֶנּוּ* *beside the fountain*. Note that 1 Kings i. 45 says that when the people returned from *Gihōn* to the city, *they came up* to the latter, further evidence that *Gihōn* lay in the valley.

³ Levy, *Chald. Wörterbuch*, ii. 406. We need not ask, therefore, whether *En-Rogel* had anything to do with the *Field of the Fuller* (*פֶּלֶא*) which must have lain outside the mouth of the *Tyropœon*. See above on *Isaiah vii. 3*.

Spring or the Bîr Eiyûb or some other spring in the Kîdrôn Valley now lost. The Biblical data are these. When David fled before Absalom, Jonathan and Ahimaaz stayed in En-Rogel out of sight of the City to obtain for the King news of the progress of the revolt.¹ When Adonijah set himself up as David's successor *he sacrificed sheep, oxen and fat beasts by the stone of the Zoheleth, which is beside En-Rogel.*² And the Priestly Writing mentions En-Rogel as the southmost point of the border of Judah and Benjamin which thence turned north up the valley of Hinnom *to the shoulder of the Jebusite.*³ On these data some have identified En-Rogel with Giḥôn, the modern Virgin's Spring, because the latter is the only known spring in the valley⁴; because the name Zoheleth is still attached to the rocky ascent to Silwan village opposite the spring; and because the spring cannot be seen from the City where Absalom was in power. Others prefer Bîr Eiyûb, because while it also may be regarded (even now) as a spring, the corner of the frontier coming from the north and turning up Hinnom would be more naturally found there than at the Virgin's Spring. The discovery of an equivalent for the name Zoheleth, so near the Virgin's Spring, and so far from the Bîr Eiyûb, is the one strong reason for the identification of the former with En-Rogel. But it is not final.⁵ And on the other hand the narrative of Adonijah's feast at En-Rogel and Solomon's coronation at Giḥôn (= Virgin's Spring) seems to imply that the two situations were at some distance from each other.⁶

We may therefore safely include that En-Rogel was not

¹ 2 Sam. xvii. 17.

² 1 Kings xvii. 17.

³ Josh. xv. 7; cf. xviii. 16. *The issues* of the border were at En-Rogel: that is to say, one left the territory at Benjamin there.

⁴ Zehweleth. Clermont Ganneau in *P.E.F. Mem.* "Jerusalem," p. 293.

⁵ The Zoheleth of 1 Kings xvii. 7 is a *stone*, that is a separate boulder or pillar. The modern Zehweleth is a rock-face. Besides names drift.

⁶ Besides the different names, which as occurring in the same narrative can hardly be intended to signify the same place; it is clear that Adonijah and his friends did not know that Solomon was crowned until Jonathan came and told them. (1 Kings i. 41 ff.)

Gihon, but lay some way off down the valley, and was either Bîr Eiyûb or a fountain now lost. In regard to this latter alternative we must keep in mind the uncertainty brought into the question by the earthquakes.

It is not clear, indeed, that En-Rogel is always used as the name of a spring. While waiting for information from the city to carry to David, Jonathan and Ahimaaz, anxious as they were to escape the notice of the townsfolk, would hardly choose so public a place as a well. A suburban village would better suit their purpose, and En-Rogel in their story may well be the name of such a village, standing on the eastern bank of the Kîdrôn Valley, either on the site of the present Silwan or farther to the south. (It may be also a village that is intended by En-Rogel in the delimitation of the frontier between Judah and Benjamin).¹ If the village existed it took its name from a spring, and for this it would not be unreasonable to look on the east edge of the Kîdrôn Valley. A great volume of water falls on the porous limestone strata of the mountain above. Sinking through these it might as naturally be ejected, on the eastern side of the valley, by the harder strata which come to the surface in the latter, as the waters of Gihon are ejected on the west. Against such a hypothesis there is the possible identification of En-Rogel with the Erogē of Josephus, which he seems to place to the west of the Kîdrôn Valley. But, however this may be, it is certain that En-Rogel was at some distance from Gihon.

The Spring or Well of the Dragon² mentioned by Nehemiah, cannot be identified. He says that the Gate of the Ravine lay in face of it. By *ravine*³ is usually understood the valley of Hinnom. If this was the present Wady Rabāby, Nehemiah's phrase would roughly suit the identification of the Dragon's Well with the Bîr Eiyûb, and some

¹ Josh. xv. 7, xviii. 16.

² יַיִן הַתַּנִּין The LXX has Well of the Figs (Ὠρενίου), but the Hebrew text is confirmed by Lucian : τοῦ δράκοντος.

³ רַבֵּי

authorities, who have also identified En-Rogel with the latter appeal to the Stone of the Zoheleth or Serpent-Stone, which was beside En-Rogel—as if serpent and dragon meant the same. But if the valley of Hinnom was the Tyropoeon, the Dragon's Well must have lain in the latter, and was either the issue of water from an aqueduct down its course—just as the Arabs to-day call the mouth of the Siloam tunnel an 'Ain or spring—or else a true spring which has been lost. Here is another case of uncertainty produced by the action of the earthquakes.

The long study we have pursued is full of dark details, and we leave it baffled by many of the answers of which we have been in search. Yet it has its own prizes, and they are more precious than those of topographical certainty. We cannot have worked through this series of water-systems without a vivid imagination of the ceaseless age-long labours which produced them, or without a profound sympathy with the hopes which their meagre results excited in the hearts of their authors.

In casting our imagination along the history of Jerusalem we are too apt to be content with recalling her markets, walls, palaces and temples, and with the endeavour to construct from these alone the full picture of her interests and activities. But preliminary to trade, warfare, worship and every kind of art, woven through all, and on those high and thirsty rocks—more constant than any of them—there was the struggle for water. Nature lent but a grudging assistance. Nor are there mighty arches or other imperishable constructions to bear witness that genius, or imperial wealth, or the power that could command hordes of slaves, ever atoned, as on other waterless cities, for the absence of physical resources. The work was nearly all done by the people under pressure of their daily needs, by petty kings hurriedly providing against sieges, by statesmen with limited revenues in a nation of no capacity for architecture. What thrift and storage of scanty supplies! The dykes of Holland,

to keep the water out, tell no more eloquent tale of the ceaseless labour of centuries, the piety and resolution of generations mostly nameless, than does this story of what Jerusalem has done to keep the waters in: the rough rock-cisterns of her early settlers; the long aqueducts and deep reservoirs of more numerous and civilized generations; the irrigation of gardens; the struggle to keep pace with the gradual rise of the City's levels above the sinking water supplies of the past; the desperate care to bring in the outside water from reach of besiegers; the execution of tunnels and pools with (as the Siloam tunnel pathetically witnesses) the possession of but poor engineering abilities; and all the repairs and restorations required after the earthquakes and numberless sieges and overthrows which Jerusalem endured.

When all these labours resulted in such moderate achievements—when the reservoirs and springs were liable to be exhausted by the winter's drought, and the irrigated gardens scarcely relieved the barrenness of the landscape—do we wonder that as the mirage of the desert appears as pools and lakes to the parched travellers, so this thirsty people's hopes assumed the form of streams and rivers about their Holy City? It is only such a study as we have come through that can give us a full sympathy with these words of psalmist and prophet:—
There is a river which makes glad the city of our God. And he brought me back to the door of the house; and behold waters issued out from under the threshold of the house eastward . . . and it was a river that I could not pass through, for the waters were risen, waters to swim in, a river that could not be crossed. But there the LORD will be with us in majesty, a place of broad rivers and streams: wherein shall go no galley with oars, neither shall gallant ship pass thereby. For the Lord is our Judge, the LORD is our Lawgiver, the LORD is our King; He will save us.

GEORGE ADAM SMITH.