



Irrigation and Water-Supply in Palestine

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memory of one belonging to a wealthy family? It is to be remembered that the names of Martha, Eleazar (Lazarus), and Simeon were found by M. Clermont-Ganneau on the other side of Olivet, "close to the Bethany road and very near the site of Bethany" (*Quarterly Statement*, January, 1874, pp. 7-8), in Hebrew inscriptions on small sarcophagi. In the Greek inscriptions which he found at the same place Σ is represented by C. This is also the case on the Judeo-Greek inscription found by M. Clermont-Ganneau at Jaffa (*Quarterly Statement*, April, 1887, p. 106), and in the inscription found by my husband, Mr. Finn, near Aelodama.

E. A. F.

IRRIGATION AND WATER-SUPPLY IN PALESTINE.

MR. HARPER, in his capital book, "The Bible and Modern Discoveries," touches on a matter which may perhaps throw some light on the water-supply and irrigation in Palestine. I do not feel quite sure of the conclusion to be drawn from the descriptions given, but I judge as well as I am able in this, and leave the subject till further information turns up. At pp. 11-12 Mr. Harper quotes first from Dr. Merrill, of the American Survey, who reports having seen rows of pits, in the Vale of Siddim, and "counted in one place a row of 31, and in another row, 20; they are from 3 to 6 feet deep, and he says more can be traced." Mr. Harper also received an account of these pits from the Rev. J. Neil, who visited them before Dr. Merrill. According to him the pits are about 6 feet deep; then there is a deep shaft or well; "this well is connected with the next pit by a tunnel, so that when that well is full it overflows into the other pit, and so on through the whole series, every pit having a well. The first pit being on higher ground would catch the rain-water from the hills, and when the well was full the water would pass into the next by the tunnel, and so the whole row would be filled, and a good store of water secured." It is also stated that similar pits exist near Kürn Sirtübeh, and that "near Damascus the same arrangement for storing water may be seen in working order."

From these descriptions I would say that this is the same system of water supply that exists at the present day in Persia and Afghanistan, and is still in "working order" about Damascus. The pits with the tunnel connecting them form what in Persia and Afghanistan would be called a *Karaize*, but either the gentlemen who have described the pits in Palestine have not understood them, or they may be partly destroyed, and owing to this the accounts do not make them quite agree with the *Karaize*. Hence there is some uncertainty as to identity. Still, the leading points are so similar that I have little doubt but they are the same. I shall here give an idea of the *Karaize*, so that it may be com-

pared by travellers with the remains in the Vale of Siddim, and with the system still working near Damascus. In Persia land is of little value, but a supply of water is wealth. In many parts streams are scarce, and it is by means of the Karaize that water for irrigation is found. In the part of Persia that I journeyed over with the Afghan Boundary Commission—that is, in a line east from Tehran—these works exist everywhere. There are men whose profession it is to find out a source of water below ground near the foot of the hills, and when this has been discovered there are men who will make the Karaize. They dig a series of pits, about, perhaps, twenty or thirty feet apart, and to a depth which depends upon the soil and the level of the Karaize. These pits are not wells; they are only the means by which the tunnel through which the water is to flow is made. This subterranean aqueduct extends from the source to the point where the water is required, and there it flows out, cool and clear, for the use of a village, but principally for the irrigation of the fields. The pits are kept open, so that the men can go down at any time to clear out or repair the tunnel. The pits and the connecting tunnel below, described by the Rev. Mr. Neil, so exactly resembles a *Karaize* that I can scarcely doubt the character of the remains in the Vale of Siddim; but Mr. Neil describes the pits as wells, and ascribes to them the purpose of storing a supply of water. Now, this is exactly what would result in a Karaize if the lower end of it was destroyed, so that the water could not escape. It would accumulate and fill up the pits. Of course I only give this as a guess, and leave it for further investigation.

If the suggestion here made should turn out to be a correct one, it will have an interest in many ways. It will show that a system of water supply has extended in the past from Palestine eastwards as far as the Khyber, where I first saw a Karaize. In the Jellalabad Valley they are numerous—and at Heda, an ancient Buddhist site, there are the remains of one tunnelled through the rock,—showing that this method of supplying water is of great antiquity. If the pits in the Vale of Siddim should ultimately be accepted as the remains of a Karaize, the “ditches,” referred to by Mr. Harper, 2 Kings, iii, 16, will most probably have been the same. By throwing light on the water supply of Palestine it will explain to a certain extent the curious problem as to the former fertility of the Holy Land, with which the existence of a large population, and extensive cities, are connected. I have seen a large stream flowing from a Karaize in Khorassan, beyond which there were no other indications of water in the locality. Without this supply the place would have been a desert; by its means a number of villages existed. I have read somewhere that the Valley of Nishapur in Khorassan was at one time called “The Valley of twelve thousand Karaizes,”—an Oriental exaggeration no doubt,—but then the valley at that time was fertile and populous, and Nishapur was a great and celebrated city. I mention these facts to show how this particular system of water supply was related to fertility and population in one part of the world; and if it existed in Palestine, it will be a sufficient explanation of the same conditions.

If the arrangement which is said to be in "working order" at Damascus is similar to the *Karaise*, we need have little doubt but the system existed in Palestine. I have never been to Damascus, but many persons have, and it is to be hoped that some one will be able to tell us what the system is at that place. In the *Quarterly Statement* for 1881, p. 38, there is a mention of an underground stream, "which, rising near Hebron, runs southwards to Beersheba, and thence westward to the sea, passing by the site of Gerar." In the *Quarterly Statement* for 1873, p. 149, and 1876, p. 121, will be found notices upon the water supply of Palestine.

To the author of "The Bible and Modern Discoveries," as a "Brother Brush," I beg to convey my congratulation on his production, and wish the book every success, which I am sure it will receive.

WILLIAM SIMPSON.
