

and spoils the fields in a few years, unless they are heavily manured."

It seems safe to conclude that the kariz is, comparatively speaking, an innovation in Turfan, and that the greater density of population in ancient times was not made possible by its more general use. On the contrary, under its stimulus there has been a marked increase in population during the last century, as I was told again and again. As nearly as I could ascertain, the population of the entire Turfan basin consists of 9500 families, about 50,000 souls. Of these, 5400 are supported by surface water, and 4100 by kariz water. If it were not for the kariz, the population of Turfan would be only sixty per cent as great as at present, and would not number more than 30,000. Only the towns close to the Fire Mountains and at the east and west ends of the basin would be habitable. There would be nothing to represent the numerous ancient towns, which, though they had only surface water to rely upon, once dotted not only the region of the kariz villages, but also the still drier, more saline region farther toward the playa.

The history of Turfan, so far as it is known, is precisely what one would expect if it has passed through the same series of climatic changes as has the Lop basin. At the beginning of the Christian era, Turfan is mentioned in Chinese records as a densely populated and most flourishing region. During the succeeding dry epoch, it sank to insignificance; but when the climate changed for the better, it revived. According to Grum-Grshimailo, Kara-Khoja, the largest of the ruined towns, was founded between 874 and 913 A. D., and existed until 1644 A. D. or later. In its days, Turfan was