

hiding the relics<sup>10</sup>. But it only needed a careful examination of this very feature to dispel the notion of the conjectural catastrophe.

Layers of  
pure soil  
above  
débris.

The strata containing the old remains are everywhere covered by a considerable layer of pure soil, which from the first interested me greatly on both antiquarian and geological grounds. It shows a fairly uniform thickness from 9 to 11 feet in the banks near Allāma, while in those exposed south of Khalche it varies from a minimum of 11 feet to a maximum of about 20 feet at different points. This layer is easily distinguished by its light colour from the 'culture-strata' below, and is absolutely free from remains which might indicate subsequent occupation of the site. The latter fact is realized by the villagers, who everywhere would readily show the limit up to which the old stratum extends, and above which there begins what they call *bēkār yer* ('unprofitable ground'), i.e. the natural soil, yielding neither gold nor antiques. Wherever I examined the earth overlying the 'culture-strata' it proved exactly the same in substance and colour as that which is to-day turned up by the plough of the Yōtkan cultivator. Another important fact, which the careful examination of this layer established with equal clearness, is the total absence in it of any traces of stratification.

These observations conclusively prove that the present position of the culture-strata of Yōtkan cannot possibly be the result of a great flood or series of floods which have overwhelmed the site; for such a catastrophe, if it had ever occurred, would have been bound to leave its mark in stratified deposits of varied character. But the facts thus observed on the spot did more than dispose of a vaguely suggested hypothesis; they also led on to what I still hold to be in the main the true explanation of the deep cover under which the remains of the old town have rested.

Origin of  
covering  
earth layers.

In my 'Preliminary Report' I did not hesitate to express my belief that this great layer of pure soil, above what we can show to be the débris accumulations of the ancient capital, was 'due mainly to silt-deposit, the necessary result of intensive and long continued irrigation'<sup>11</sup>. The reasons for this conclusion were derived solely from what local observation had shown me within the Khotan oasis. Having since my return fully realized the geological interest involved in the question and its close relation to the much-discussed problems of loess, I feel specially gratified that the opinion then formed on the spot has stood the test of the analysis to which an exceptionally qualified geologist, Prof. L. Lóczy, has been kind enough to subject the specimens of soil brought back by me from Yōtkan.

Silt-deposits  
from irriga-  
tion.

Without anticipating the information which Professor Lóczy's instructive communications in 1903 enabled me to gather with regard to a very important subsidiary factor, I may be allowed to state in the first place the case as it presented itself to me solely on the basis of my local impressions, and as I have already recorded it in my Personal Narrative<sup>12</sup>. Cultivation in the Khotan oasis, as everywhere else in Eastern Turkestan, demands constant and ample irrigation. The Kara-kāsh river, from which the water for the Yōtkan fields is drawn in the spring and summer, carries down during this season enormous quantities of disintegrated soil from the eroded ranges it drains. Its water, full of suspended sediment, and hence of a dark yellow or chocolate colour, is allowed to stand on the carefully terraced fields until it is completely absorbed or evaporated. As all the fine detritus or mud borne down by the river-water thus finds its way to the fields and is ultimately deposited there, the accumulation of silt over the latter must be constant and relatively rapid. Since the conditions are exactly the same in the

<sup>10</sup> See Hoernle, *Report on C.-A. antiquities*, i. p. xiii; *Mission D. de Rhins*, iii. p. 126.

<sup>11</sup> See *Preliminary Report*, p. 29.

<sup>12</sup> *Ruins of Khotan*, p. 263.