

In times of flood, however, when the flow per second has been known to rise to 17,000 cubic feet, the Domain is allowed to divert as much of the surplus as it can use or store, provided always that 90 per cent of the minimum amount remains in the main stream. Accordingly the Domain receives more than 10 per cent of the total flow—from 20 per cent to 25 per cent according to Mr. Nikrashevich. For the sake of being on the safe side, let us call it 15 per cent of the total. This amount of water supports to-day an agricultural population numbering 15,000 souls and a further body of workmen, artisans, and tradespeople, numbering with their families not over 10,000.

In 1904 there was danger that the available water-supply would prove somewhat scanty for the thorough irrigation of the crops of even this number of people. In other words 15 per cent of the water under the most favorable conditions of irrigation can not support over 25,000 people; and all the water can not support over 166,000, or in round numbers 200,000 people, twice the present population. But even this liberal estimate leaves us with a deficit of 300,000 souls, when compared with the 500,000 whom we have taken as the population of the oasis in antiquity. Whatever the exact figures may be, it seems highly probable that the present water of the Murg-ab can not possibly support so large a population as that which actually peopled the oasis in antiquity. There appears to be no way of explaining this discrepancy except by supposing that in earlier times the flow of the Murg-ab was larger because of greater rainfall, or because of less rapid evaporation due to lower temperature.

Note to Chapter XII.—This chapter was written in September, 1904, and is here printed in its original form, the only changes being a recasting of the first paragraph, and a few verbal alterations. During the three years and a half which have intervened between the writing of the chapter and the time of going to press, March, 1908, the writer has had the opportunity to make a somewhat extensive study of the climatic problems here touched upon. The results of the later studies are set forth in a volume entitled "The Pulse of Asia" (Houghton, Mifflin, and Company, 1907). Evidence gathered from the ruins of Chinese Turkestan and from the fluctuations of the Caspian Sea, as well as from other sources, indicates that in the regions from the Caspian on the west to China Proper on the east all Central Asia has undergone a series of climatic pulsations during historic times. There seems to be strong evidence that at the time of Christ or earlier the climate was much moister and more propitious than it now is. Then during the first few centuries of the Christian era there appears to have been an epoch of increasing aridity. It culminated about 500 A. D., at which time the climate appears to have been drier than at present. Next came an epoch of more propitious climate which reached its acme about 900 A. D. There is a little evidence of a second epoch of aridity which was especially marked in the twelfth century. Finally, in the later Middle Ages, a rise in the level of the Caspian Sea and the condition of certain ruins render it probable that climatic conditions once again became somewhat favorable, only to give place ere long to the present aridity.

It is not possible in this note to point out the various lines of evidence upon which the conclusions are based. They are given in full in the work referred to above. It is evident that if the conclusions are valid, the Merv Oasis must have passed through several climatic vicissitudes since the time of the earliest kurgans. In that case it should have experienced a corresponding series of epochs of expansion and prosperity during times of more propitious climate, and of contraction, distress and retrogression during times of unpropitious climate. No definite conclusion as to the matter can be reached as yet, since our knowledge of the history of Merv is still fragmentary, and especially since there has never been any full study of the distribution of ruins of different ages, whereby