

evident that at the time of the kurgans, say 1,000 or 2,000 years ago, the Merv Oasis was more extensive than it is to-day. That this decrease is due to changes in the methods of irrigation is hardly possible. The earlier times, as we have seen, were characterized by a highly developed system of intensive irrigation, under which the distributaries were short, but highly branched, while the present is characterized by a poor system, now in process of rectification, under which the distributaries are long and but slightly branched.

In other words, the change in the system of irrigation has been one which, other conditions remaining unchanged, would have caused an apparent increase in the size of the delta. Yet exactly the opposite result has taken place. The limits of the main canals have been drawn inward in spite of the fact that the number of side canals has decreased. Above Yelotan, so far as we know, the country along the upper Murg-ab is no more densely populated now than formerly. Therefore, the diminution in the cultivated area can not be due to the lessening of the water-supply of the Merv Oasis by the diversion of water farther upstream. Neither such diversion nor a change in the irrigation system can account for the lessening of the area capable of cultivation. The only other competent cause for such a diminution would seem to be a change in the amount of water furnished by the Murg-ab. Such a change would seem to require a corresponding variation in the climate of the mountains of northern Afghanistan, where the Murg-ab takes its rise. A change in the climate of northern Afghanistan would probably involve a similar change at Merv and elsewhere. Accordingly the ruins of Merv seem to be explicable only on the theory that in ancient times the climate of the country as a whole was more humid than it is to-day.

If we approach the subject from another point of view, we arrive at the same result. The present population of the oasis of Merv below Yelotan comprises about 65,000 Turkomans, mostly cultivators of the soil who have recently given up nomadism, and a considerable number of townspeople of other nationalities, so that, at a liberal estimate, the total reaches 100,000. In ancient times the oasis is said to have contained a million people, and the size of Ghiaur Kala and of the other old cities, the number and character of the outlying and apparently contemporaneous ruins, and the degree to which the traces of thickly populated villages extend into the desert, make this seem highly probable. Assuming, however, that the true figures are but half a million, could the oasis to-day support so large a number of people?

At Bairam Ali on the Imperial Domain, under the direction, formerly of Mr. Dubosof, and now of Mr. Yermief and Mr. Von Brandt, there is a portion of the oasis where the most modern and economical system of irrigation prevails, and where a given amount of water supports the maximum population. The water for the Domain is diverted from the Murg-ab by means of the Hindu-Kush dam, just south of Yelotan, which was completed in 1894. According to Mr. Nikrashevich, the superintendent of the dam, the minimum flow of the river at this point, before any of the canals of the oasis are taken off, amounts to 1,500 cubic feet per second, and of this the Imperial Domain has the right to divert 10 per cent.