

a sufficient general increase of precipitation or even some change that would give rise to a larger proportion over the plains would make the desert into grass and thus break down the protective barrier. Also a large volume of water would penetrate farther out in the desert, a less volume less far, so that the delta with its oases, ever since there were any, must have varied in distance from the mountains, shifting out or back; responding to all greater cycles of climatic change. It is also evident that a river whose grade is for 100 miles that of a vast silt-made plain must have been extremely sensitive to any warping or tilting of its channel. But even greater must have been the changes wrought by floods, the ever-shifting of distributary systems or even bursting of the whole river out to build elsewhere anew. If we could look back through foreshortened geologic time, the Murg-ab would appear in course and kind fast changing, a river living through a marvelous variety; we might first see it flowing to the ancient Aralo-Caspian, and as that sea is cloven into shrinking remnants, and rivers wandering free-ended join, we see the Murg-ab now with the Tedjend, now with the Oxus, then shrunken alone and ever shifting, with meanders, made to break into new straightness; a silt-laden flow that coils to burst and glide in some new wandering way; a river which with its season's flood may spread rare water in a wide sheet far out among the dunes and from that flood subside into new channels; for millenniums be led far to one side, leaving what was garden so by chance transformed to desert.

Thus were the oases of Merv controlled by Nature's ways and, though man could not prevent the effect of long-changed climate or much alter that of serious crustal movement, if it happened, the capricious behavior of delta distributaries used by him so stimulated his ingenuity that in time he got them under control. The Murg-ab with her silting distributaries proved a costly school, but graduated engineers whose works—canals, barrages, water-gates, and meters—were a marvel to antiquity.

An oasis so bountifully favored, and whose civilization was so stimulated by trade relations and the natural education forced upon its type, as well as the protective isolation of that type, bore a populous and wealthy growth with varied culture; a growth that always recuperated rapidly after falling to the power of such organized attacks as those of Alexander, Genghis Khan, and Timur.

The present outlines of bare clay upon the Murg-ab delta are irregularly pronged and have the aspect of a change or shrinkage of alluviating area, upon whose abandoned parts sand-dunes are drifting. In a general way it resembles a long leaf about 30 miles across, with two prongs—the left-hand one longest, and main axis pointing northwest to follow a general slope of the Turkoman Trough towards the Caspian. The convexity of alluviation is beautifully emphasized by its radiation of distributary veining and indicates a permanence of the present position of the delta for many centuries.

At present it is impossible to indicate the whereabouts of Murg-ab's most ancient oases. Knowing that for some thousand years all Central Asia has been undergoing desiccation, our first thought is to look north beyond the limits now attained by water. There is, however, no reason to doubt that a climate even