

way the migrations of the river-bed impose from time to time a limit upon the extension of the desert sands, through their being thus to some extent swept away by the current. On the other hand, it is perfectly self-evident, that the close proximity of the drift-sand acts as a contributory factor to the river's vacillation, in so far as the winds carry its sand into the river-bed. This topic will, however, be discussed more fully later on. Certain it is, any way, that the portion of the Opghan-darja, which formerly travelled through the desert, is now buried underneath its sands. The dunes, whose onward movement was arrested by the advent of the Opghan-darja, have, like those which were stopped by the Jumalak-darja, on the removal of the obstacle, been able to continue their advance in one direction or the other. During the course of the thirty years which have passed since the Opghan-darja dried up, the sand has undoubtedly poured across its bed, at all events for long distances, in the same way as we shall find subsequently has been the case with the Ettek-tarim. It only requires the dunes on the one bank or the other to advance at the rate of two or three meters a year for the inevitable result to be produced. It is of course evident, that the dunes are older than the Opghan-darja, and that the river flung aside those which stood in its path. The next time the stream returns, in the future, to the channel of the Opghan-darja, it will have to do the same work all over again. It is indeed amazing that running water should possess such enormous force as to make headway against these overwhelming masses of sand. On the other hand stationary water is no more able to check the onward progress of the sand than the atmosphere is when at rest, so that the pools which probably remained at some time or other in the bed of the Opghan-darja have been powerless to arrest the resumed movement of the dunes.

After passing these two confluences we traversed a part of the Tarim which is very old, and which formerly served as the continuation of both the Atschik-darja and the Opghan-darja, just as this part itself now forms the continuation of the existing Tarim. Hence in that section the velocity diminishes, the river-bed broadens out, and becomes more deeply excavated. Above the two confluences the river-bed is still narrow, and the actual current occupied a broader section of it than the alluvial deposits did. As the map shows, the relation between the two naturally varies all the way down the Tarim. Where the river is narrow and deep, the alluvium necessarily finds little opportunity for forming deposits of any consequence; but where the river grows broad and shallow, there is ample room for it to do so, and in such reaches even an insignificant fall is sufficient to expose quite large expanses of alluvium. The work of erosion, which takes place in a river of the Tarim's character, is done, not at the bottom, but at the sides, and it is in this way that the innumerable loops are originated. So far indeed is the bottom of the river unaffected by erosion that it rather tends to rise, partly in consequence of the deposition of fine materials brought from higher up the stream, where the erosive energy is greater, partly from the caving in of the eroded banks, and partly from materials carried into the river by the wind. This circumstance, that the river-bed, instead of being gradually excavated, tends to rise in consequence of the river's own activity, combined with the influence of the accompanying vegetation, is precisely the cause of the Tarim's instability, whereby it is incessantly shifting its course bit by bit. The only places in which bottom erosion