

The Ugen-darja had at its embouchure a breadth of 23.46 m., a mean depth of 1.756 m., a mean velocity of 0.22 m., and a volume of 9.063 cub.m. in the second. These measurements are not, however, quite reliable, since, owing to the extremely slow rate of flow, I was unable to measure more than the surface velocity, by calculating the number of seconds taken by a float to move from one end to the other of a 4.55 m. long canoe held fast by an anchor. The datum for the volume is therefore, by assumption, too great; the real result would be one or two cubic meters less, or, let us say, about 8 cub.m. in the second. At this time, however, none of the water of the Tarim was making its way up the bed of the Ugen-darja, as we were easily able to satisfy ourselves at a shallow ridge or shelf which crossed the latter stream a little way up. The Ugen-darja is indeed the deeper of the two; but there exists no reason why the water of the Tarim should penetrate up it, for all the way up the Ugen-darja stands at the same level as the Tarim itself.

The two rivers always stand therefore at the same level in the way shown in fig. 137. When the Tarim rises, the Ugen-darja must rise too, for the latter receives, as we have shown above, several arms from the main stream. When the Tarim drops, after the spring freshets are gone, then the Ugen-darja likewise drops to its lowest ebb.

In respect of their morphology there is a great difference between the two rivers. Whereas the left bank of the Tarim is 0.49 m. high and almost perpendicular, and its right bank flanked by flat alluvial deposits, the two banks of the Ugen-darja are of precisely the same height and precisely the same degree of steepness. Their height is half a meter, and the ground, an arenaceous clay, almost perfectly horizontal, the slight fall which it actually has towards the east being imperceptible to the eye. The sand-hills and conical elevations, which diversify the flat surface, are entirely of secondary formation, that is to say, they have been built up on the level base by the wind.

At the confluence of the Ugen-darja, the mean depth of the Tarim was 1.362 m., and of the Ugen-darja itself 1.756 m. The latter had therefore an average additional depth of 0.394 m.; but, if we consider the maximum depths of the two rivers, the difference is 0.560 m. This fact is deserving of consideration. At the same spot the mean velocity of the Tarim was 0.74 m., and its maximum velocity 1.20 m.; and the Ugen-darja had a mean velocity of 0.22 m. and maximum velocity of 0.27 m. in the second. That is to say, the main stream was three to four times swifter than its tributary. One would expect to find, therefore, that the proportionally greater erosive power of the former would have produced a proportionally deeper bed; whereas in point of actual fact, the Ugen-darja, whose erosive force is practically nil, possesses a deeper and more distinctly excavated bed than the Tarim. The only explanation of the phenomenon that I am able to offer is, that, whilst the Tarim's excavating force is very insignificant, its power of forming alluvial deposits is on the contrary very strongly developed. A river which flows with a mean velocity of 0.74 m. in the second does of course exercise a certain amount of erosive energy, otherwise it would very soon cease to exist; but such erosive energy as it does exhibit is exceeded by its power of making sedimentary deposits. The erosive power of the high-water is at least three or four times greater than that which