

The same author gives the following description of the region between the Chara-narin-ula and the Yellow River: »Six or seven versts from the foot of the range (Chara-narin-ula) the road crosses a depression like a river-bed, about 100 sashen broad, and with bare clay at the bottom, but in general the course is not very distinctly indicated. Possibly this is an old bed of the Hwang-ho. In its bottom there is a well $1\frac{1}{2}$ arshin deep, and on its southern bank the sand-hills have much steeper slopes towards the south-east. Farther on the cauldron-shaped depressions amongst the sand-hills grow more numerous; the surface within them consists of yellowish grey or brownish yellow clay, with frequent crystallisations of salt. At intervals on the hills, but especially in the cauldron-shaped depressions, there are small beds or low reeds. In the latter there exist also accumulations of sand, 3 to 4 arshins high, and overgrown with charmik. Gradually the sand-hills grow higher, reaching up to 5 or 6 sashen, sometimes to 8 or 10, and in shape they approximate more and more to the type of the barkhan, having their steep slopes turned towards the south-east, and their crests running NE. $35-40^{\circ}$. It is quite evident that the effect which the prevailing west-north-west and north-west winds exercise upon the accumulation of the sand increases directly as the distance from the foot of the mountains, for these serve as a gigantic screen. The sand in the barkhans is fine-grained, but in the depressions somewhat coarser; here however we no longer have such broad crests or such coarse sand as to the north of the old river-bed. On the other hand saksaul appears here in the form of bushes and trees about 4 arshin high. At 10 versts from the mountains the surface begins to rise, while the sand-hills grow fewer, and at the same time their altitude diminishes. In between the hills, barkhans, and chains of dunes there are level tracts, more or less extensive in area, with clay soil, in some places bare, and slightly grooved, but for the most part bearing bushes. Often the clay is covered with a layer of sand, and on it grow grass and bushes of various kinds. In these tracts there are small sand-hills recently heaped up, 2 to 4 arshin in height . . .»

»Upon a reconsideration of the higher and barer belt of sand, accumulated in the depression, 4 to 5 versts broad, that lies along the foot of the range of Chara-narin-ula, and corresponds to the ancient bed of the Hwang-ho, it became even more unmistakably clear that it must have been a long time ago when this channel was abandoned and fell a prey to the sand. This sand, to judge from the direction of the barkhans and the crests of the barkhan-chains, must have come from the north-west, for the steep sides are turned towards the south-east; and this too was the story told by the particles of sand, for they grew smaller and smaller the farther we proceeded towards the south-east. The heaping up of the drift-sand in the ravines and gorges of the Chara-narin-ula proves that a part of the sand is carried thither by the wind from Central Mongolia, over the top of the range. Another portion is formed *in situ* out of the old alluvia of the Yellow River and the disintegrated material of the screes deposited by the erosion torrents of the mountain-range.»*

Finally Obrutscheff gives the following description of the sandy desert of Kumtagh (Scha-schan), lying east of Turfan and south of Pitschan, the date being the 3rd

* *Op. cit.*, vol. II. p. 473.