

CHAPTER XXXI.

ORIGIN OF SAND IN THE TARIM BASIN: ALLUVIAL SAND AND ALREADY EXISTENT MARINE SAND.

Let us now proceed to consider the first of the three original sources of the sand which I have mentioned above, namely the power which the wind possesses, through selection and transportation, of collecting it and building it up into dunes. We have *a priori* to regard all the sand in the basin of the Tarim as having been derived originally from the encircling mountainous tracts. What now is the relation that exists between the volume of the masses of sand and the effects actually produced in those mountains by the agency of deflation and erosion? To this question I will make a feeble attempt to furnish some sort of an answer, though I hasten to add, that my figures must at the best be regarded as approximate only. The area of the lowlands in the basin of the Tarim amounts to 470,000 square kilometers. I assume that of this about 370,000 square kilometers are covered with drift-sand. When describing the Desert of Tschertschen, I assumed that two-thirds of its area were sand, and the remaining third bajir; and as in the western half of the Takla-makan bajir depressions are either non-existent or extremely rare, we may estimate the area of sand-covered ground at 300,000 square kilometers. Suppose that the dunes, or rather the accumulations of dunes, throughout the whole of the region have a mean altitude of 50 m., we then have a volume of sand amounting to 3,750,000,000,000 cubic meters, or say, for the sake of simplification, four billion cubic meters = 4,000 cubic kilometers of sand. This amount would correspond to a mountain range 400 kilometers long, 100 kilometers broad, and 100 meters mean altitude, dimensions considerably smaller than the eastern part of the Kuruk-tagh system, which, as it is, is already extremely small. The sandy material that we now find in the desert has been transported to the lower parts of the basin by the conjoint activity of winds and water. Hence it has been derived in part from the entire catchment-basin of the Tarim, the area of which amounts to 414,000 sq. km., as also, over and above that, from the region lying east-north-east of the Tarim basin that is dominated by the east-north-east wind. How great this last-named region is it is impossible to say. Let us assume however that the area of the entire region which has yielded its tribute to the sandy desert is, in round numbers, 800,000 sq. km.