

and breadth; in fact it is hardly worthy of being called the ruins of a mountain-range. Certainly it cannot in any way compare with the range that borders the northern basin on the north, that is to say with the imposing and rugged chain of the Kalta-alaghan.

During the last four days a distinct change had taken place in the weather. The wind blew predominantly from the east and the downfall was very much less than before. The reason of this is that our basin forms a relatively low-lying portion of eastern Tibet, and the circumjacent mountains intercept the precipitation. On the afternoon of the 24th August we had a violent squall from the north-east, with thunder and lightning, and the rain continued, although less violently, even after the wind had veered round to the east, and was blowing with a velocity of 13 m. in the second. Were the rainfall not so evenly distributed as it actually is, this highland region would present all the necessary conditions for the origination of a drift-sand area. In every direction there exist completely disintegrated or ruined mountain-ranges, in every direction the ground is covered with the finely comminuted material they have yielded, which, were it but dry enough, would be inevitably seized upon by the wind, and, after having been duly sifted and sorted, would be converted by it into dunes. Such vegetation as exists is so very insignificant, that its retarding effect upon the wind's activity would be infinitesimal. Seeing then that dunes are so rare — apart from those of Kum-köl we only saw minimal dune formations in two or three other places — we must turn to the precipitation to ascertain the cause of this. A downfall of rain or snow, intrinsically unimportant, is quite sufficient to prevent completed dunes from moving, and also to check the origination of dunes in places where nevertheless all the other necessary conditions are already present. On the Tibetan highland the precipitation is more than sufficient to create the requisite check, and the formation of the large dunes which do exist in the Kum-köl basin must be due to quite special circumstances, such as a more distinctly periodical rainfall with intervening periods of drought. A region such as that which we travelled across from the Arka-tagh offers an insurmountable barrier to the removal of the sand which already exists there. As we have seen, not only is the surface moist, but the moist condition certainly penetrates to a considerable depth. During the summer scarce a day passes without downfall of some kind, so that the surface of the ground is kept constantly moist, while at the same time vast quantities of water search their way vertically into it. We have also supposed, that the rainfall during the winter is but slight, at all events incomparably scanty as compared with the summer rainfall. Will not the ground then dry, so that its light and volatile material will fall a ready prey to the wind, which in winter would seem to be more violent and more constant than it is in the summer? No, that does not happen, for late in the autumn the saturated soil freezes and turns as hard as stone, so that when struck by an iron bar the white splinters fly like ice, and thus it effectually renders all wind-transportation impossible. We shall indeed come across dunes once or twice in the sequel, but both in respect of altitude and of extent they are extremely unimportant. Broadly speaking, it may be said that the origination of dunes in Tibet is rendered impossible by the precipitation.

---