

are known in north Africa which have been confined to the same place as far as historical records go back, a conclusion which may be inferred from the names of the wells. Foureau says, in his excellent description of the great Erg in the Sahara: "Dans tous les cas, l'avancement des dunes ou, pour mieux spécifier, l'augmentation de leur volume, ne se produit qu'avec une extrême lenteur, et cette lenteur ne peut provenir que de la variabilité du régime des vents, car si l'on se trouvait en présence d'un vent régulier, constant, il est certain que l'avancement et l'accroissement se manifesteraient très rapidement. Il y a donc lutte entre plusieurs aires de vent, et leur résultante n'est que d'intensité faible, ce qui vient prouver clairement qu'un vent déplace le travail et modifie le résultat des efforts de l'autre."<sup>1</sup> Foureau concludes that in the region of Africa he visited winds of the southern quadrant are stronger than all the others, and that therefore the movement of dunes takes place towards the north, though extremely slowly.

We find a region of very rapid extension of dunes in Eastern Turkestan, where I discovered in the year 1896 two towns entirely overwhelmed in sand, which were abandoned centuries ago, and have since been the object of thorough investigation by M. A. Stein. Huntington holds that the dunes of Seh-kuheh are only two or three hundred years old. Walther speaks of small single dunes in Turkestan which can move 65 feet in one day during a violent continuous storm.

It may often be difficult to detect whether a sandy expanse is moving or not. When northerly winds prevail over the Kevir, one would suppose that the sand-belt on its southern margin must move southwards. But such is certainly not the case. The sandy zone on both sides of Alem is sharply limited on the south, and saxauls grow there on level clay soil on the leeward side of high dunes. To the north the sandhills are said to begin immediately from the level surface of the Kevir, as is also the case north of Aruzun. But if one is on the lee side, that is, the southern, of this sand-belt in a strong wind, one feels the

<sup>1</sup> *Documents scientifiques de la mission saharienne*, vol. i. p. 224.