

observation. After this the cross-section of the dune valley assumes the outline  $b\ b'\ b''\ b'''\ b''''\ b'''''$ , whilst during this same period the portion  $a''\ b''''$ , which was at first covered by the lower windward slopes of the migratory dune on the west side of the bajir, now becomes exposed, its sand is swept away, and it becomes itself subject to the erosive action of the wind. A fresh phase in the process is exhibited in  $c\ c'\ c''\ c'''\ c''''\ c'''''$ . The depth of the bajir at  $c''$  becomes greater than it was at  $b''$ , because the former has been longer exposed to the effects of the wind's erosion. Meanwhile a fresh portion of the underlying stratum  $b''''\ c''''$ , which was originally covered, now comes to light, and the layer  $a''\ b'''\ b''''$  has been swept away off the immediately preceding belt to the east,  $a''\ b''''$ . When finally the section assumes the form  $e\ e'\ e''\ e'''\ e''''$ , the point  $e''$  coincides with the point  $a''$ , that is the westernmost point of the floor of the bajir taking it as it was when we began this series of supposed movements. All through the successive periods  $ab$ ,  $bc$ ,  $cd$ , and  $de$  this point has been uninterruptedly exposed to the erosive action of the wind, whereas the points  $e'\ d'\ c'$  and  $b'$  having been exposed for shorter periods respectively, have only been eroded to the successive depths of  $d''$ ,  $c''$ , and  $b''$ . Thus  $a''\ e''$  is the measure of the maximum depth to which the wind is able to excavate this bajir, for the next stage in the movement  $f\ f'\ f''$  makes the depth of  $f'$  precisely the same as the depth of  $e''$ ; and similar coincidences are produced with each fresh step that the dune takes westwards. Hence the maximum depth in each individual bajir remains, *ceteris paribus*, constantly and unchangeably the same, namely equivalent to  $a''\ e''$ , so that this gives the maximum value of the power of the wind's erosive energy at the point (point in the section, but a line in reality) which is longest exposed to its influence. And this is no mere theoretical construction, but is a true representation of what actually occurs; for every bajir, no matter in what part of the desert it may be situated, presents in cross-section the curve which I have shown and described, that is to say, its concavity dips lowest on the east and gradually curves up towards the west. How is it possible to explain in any other way the extreme regularity in the moulding of the surface of the substratum? If the ground upon which the dunes rests were in itself undulating or furrowed, some of the bajirs would be deepest in the west, while others of the dune-valleys would be replaced by swellings or elevations of the surface. But to the law which I have stated there does not exist so much as a single exception. Indeed we may with good reason say that in the interior of the Desert of Tschertschen there is but one power of nature which is actively at work, and that is the wind. In other regions other powers are also operative in modelling the relief features, such as denudation (which by its disintegrating action opens the door to the rupturing influences of the frost), changes of temperature, precipitation, erosion, deposition of alluvium, corrasion, deflation, and the direct and indirect effects of the presence of organic life. But the materials of which the Tschertschen Desert is composed consist entirely of the products of disintegration and alluvial formation, these and nothing else, and they are, as it were, immune from every other influence except the power of the wind to transport those of their particles which are sufficiently light and imponderable. The violent storms remove bodily *all* material that is unsheltered, while the gentle winds act through deflation. Thus not only the existence of the bajirs