

pearance of a mirror-like expanse; but the sandy waves remain in the positions they have assumed until fresh winds come to move them again. Moreover the latter advance increasingly slower in proportion as they grow higher, and so in the course of time they rise to colossal dimensions. But these considerations are of a secondary character, and do not in the very slightest degree affect the comparison I have instituted.\*

Just as the oceanic currents may be said to be the result of the increasing activity of the wind through countless millennia of years, so may precisely the same thing be said of the dune-accumulations in, for example, the Desert of Tschertschen. They have assumed the form of gigantic yellow waves, some 90 meters in height, with immense cascades of sand, all of a stereotyped monotony, on their leeward side. Approach them some still, bright winter's day. There they lie silent, still, and immovable. Not one particle of sand changes its position, not a sound disturbs the solemn silence, not a distant murmur reaches the ear. It is the realm of the stillness of death—indeed it would be impossible to imagine anywhere on the earth a more convincing picture of death and silence. And yet those lofty masses of sand are waves that are moving irresistibly forward and destroying everything in their path; and the reason they wear such a peaceful appearance at the moment when we approach them is that we have done so in an interval of rest, an interval that is a periodical episode in their ruthless westward march. These 90-meter high accumulations of dunes represent the sum of the activity of the wind during thousands upon thousands of years, the work of transportation which the east-north-east wind has been performing for countless ages, the result of an energy which has always been steadily directed towards one and the same common end. During the course of time millions upon millions of dunes have clambered up the windward side of the dune-

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\* If you compare Pl. 51 of vol. I with the photograph of »a gale in the Mediterranean«, made by Vaughan Cornish, and reproduced in *The Geogr. Journal* (May 1904), You cannot deny that the desert of sand-dunes is very like the open heavy sea during a gale. Most travellers who have visited real sand-deserts call attention to this likeness. Zittel, already cited by Baschin, calls a certain part of the Libyan Desert »ein einziges undurchdringliches Sandmeer«, and continues: »So weit das Auge reicht, folgt Dünenkette auf Dünenkette, alle entweder von Nord nach Süd oder von Nord-Nordwest nach Süd-Südost streichend; die Zwischenräume sind mit Sand ausgefüllt und gleichfalls mit niedrigen Hügelreihen bedeckt. Wie ein plötzlich erstarrtes vom Sturm aufgeregtes Meer liegt diese Sandmasse vor dem Beschauer, scheinbar fest und doch beweglich«. (*Pet. Mit.* 1874 p. 185). And Rolland has clothed the same impression in the following words, speaking of the Erg in the Sahara: »Le voyageur qui traverse une grande chaîne de dunes se croit au milieu d'un dédale inextricable; mais s'il gravit une cime élevée, il est dédommagé de ses fatigues par le spectacle grandiose auquel il assiste: les dunes qui l'entourent de toutes parts ressemblent, surtout quand elles sont bien orientées parallèlement, aux lames de l'Océan, s'élevant les unes derrière les autres jusqu'aux limites de l'horizon. C'est comme une mer de sable, soulevée par un vent furieux, puis tout à coup solidifiée.« (*Géologie du Sahara Algérien*, p. 214.) The memorable journey of Gerhard Rohlfs' expedition in the Libyan Desert, from the description of which the above citation of Zittel's letter in *Pet. Mit.* is taken, reminds me in many respects of my own experiences in the Takla-makan and Tschertschen Deserts. For instance: »Am 6 Februar traten wir unseren Marsch an, täglich wurden etwa zwei oder drei Dünenketten in sehr spitzem Winkel überschritten, wo sich gerade ein günstiger Übergang darbot; in den sandigen Längsthälern fanden unsere Kameele so trefflichen Weg, dass wir jeden Tag ungefähr 36 bis 40 Kilometer in 9<sup>1</sup>/<sub>2</sub> Stunden zurücklegen konnten. Unser 15 tägiger Marsch durch das grosse Libysche Sandmeer gehört sicherlich zu den eigenthümlichsten Reiseleistungen und war überhaupt nur durch unsere eisernen Wasserkisten möglich . . . Unsere Wüstenreise besass die grösste Ähnlichkeit mit einer Fahrt auf offener See; wie dort der Kapitän hauptsächlich nach Log und Peilung fährt, so wurde unsere Karavane mittelst Kompasses geführt . . .« (*Pet. Mit.*, 1874. p. 185).