

traditions, and historical data, as well as by other ruined sites along the southern border of the sandy desert that fills the basin of the Tarim, namely that as a matter of fact this desert is extending towards the south-west, and is now seriously threatening the narrow strip of cultivated ground which stretches along the northern foot of the Kwen-lun Mountains, and of which large portions have already been swallowed up by the irresistible advance of the all-engulfing dunes even during the brief period covered by local tradition.*

With regard to the metamorphosis that the dunes undergo in their advance, that is, partly increasing, partly coalescing together, I share fully Walther's point of view, when he says: »Ich finde mich in Übereinstimmung mit von Middendorf, Sokolow, Muschketow, Bogdanowitsch und anderen Forschern, wenn ich betone: Die Bogendüne ist der normale Typus eines auf freier Fläche entstehenden Sandberges, sie muss überall entstehen, wo sich windgetriebener Sand anhäuft, and alle übrigen Dünenformen müssen prinzipiell von der Bogendüne abgeleitet werden.»**

And with this agrees also Konschin's division of the Trans-Caspian deserts into 1) barkhan deserts, absolutely barren, and covered with crescentic dunes; 2) hummocky deserts, dotted with mounds held together by vegetation, which were dunes formerly; 3) deserts in which the dunes are arranged in rows, the arrangement

direction de la résultante mécanique des vents, et cette direction est indiquée par les emplacements des grandes dunes par rapport aux régions qui les alimentent. Les grandes dunes ne sont pas, à proprement parler, mobiles, mais elles présentent une progression lente suivant la résultante mécanique des vents.» (Géol. du Sahara alg., p. 228).

* It should be easy to multiply the examples of cities and cultivated grounds, which, standing at the edge of a sand-desert, have been buried under the advancing sand-masses. Many travellers have given more or less graphic descriptions of such accidents. I will only quote two or three such examples. Loczy says: »In der Nähe von An-si-fan, wo der Wind allem Anscheine nach mit dem Sande des Inundationsgebietes des Su-la-ho sein Spiel treibt, verursacht der Flugsand bereits mehr Unannehmlichkeiten. Die Stadtmauern sind von Sand umgeben und an der SO-lichen und SW-lichen Seite stecken dieselben gänzlich im Sande. Unweit des heutigen An-si-fan stossen wir in N-licher Richtung auf die gestampfte alte Mauer der verlassenen Stadt, innerhalb welcher sich nicht ein einziges Gebäude, sondern an Stelle dessen ein runder Teich befindet; auch diese Mauer wird rings herum von Sand umgeben. Solcher verlassener Städte gibt es ausserhalb der grossen Mauer mehrere. Kua-tschua ist ebenfalls eine verlassene Stadt, die anlässlich des letzten Aufstandes (1868—1872) von den Tunganen zerstört wurde, doch mag ihre gänzliche Unbewohntheit und Verlassenheit wohl auch dem rings herum wehenden Sande zuzuschreiben sein.» (Die wiss. Ergebnisse der Reise des Grafen Béla Szechenyi, I. p. 521). Mac Gregor says: »Yuzd is situated in what may rightly be termed an oasis. In all directions, immediately outside of the city and surrounding villages, there is a howling wilderness, where the sand seems to be gradually encroaching on the cultivation. I had always before found it rather difficult to realize such a thing as a city buried in sand and disappearing entirely. But places like Yuzd show the process clearly enough. At several points in the circumference of this town, the sand has reached quite up to the top of the wall and is now every day being blown into the interior. Of course the progress is slow, but it seems very sure.» (Narrative of a Journey through the Province of Khorassan, vol. I, p. 75).

And finally I may quote Bellew, who says: »The shrine of Ordam Padshah is itself buried in sand, and poles tufted with yak-tails mark the spot of the grave. But the monastery, and some almshouses around are built on small, clear spaces on the plain, which appear here and there amongst the heaps of sand, and form as it were lanes running in the direction of the march of the sand-dunes. Some of the larger dunes, at a distance of three or four hundred yards off are directed obliquely upon the monastery, but as they seem to advance here at a very slow rate — twelve years having passed since the dune broke into the court of the tenement mentioned without having yet completely filled its area, which is only ten or twelve paces wide — the confident faith of the venerable Shekh who presides over it may prove justified. 'The blessed shrine has survived the vicissitudes of eight centuries', he said, in reply to our forebodings of the danger threatening its existence.» (Kashmir and Kashgar, p. 373). In *Pet. Mit.*, Ergh. No. 131, p. 232—33 I have made a comparison between Bellew's and my own observations regarding the dunes of Ordan Padschah, which I visited 22 years after Bellew.

** *Gesetz der Wüstenbildung*, p. 125.