quoted as the rate of annual advance in the north-eastern part of the Desert of Tschertschen *may* be pretty near the actual rate.

In the case of the crescentic individual dunes the two wings are pushed forward in the direction of the wind at a faster rate than the main mass of the dune, and faster also than its crown, a circumstance which is in full agreement with the law laid down as to the relation that exists between the rate of advance and the mass. But in the case of the accumulations built up of countless separate individual dunes the relations are different. It is precisely because they have coalesced together into a homogeneous conglomeration of individual dunes that their individualistic properties no longer come into play; but their laws of movement, like the paths taken by the winds, are more complicated. We no longer find wings shooting on ahead faster than the main mass. Any individual dune, that at a relatively great rate climbs up to the crest of a dune-accumulation, entirely loses its individuality upon passing over to the leeward side of the accumulation. And probably under these complicated circumstances the law governing the proportion of rate of movement to mass does not always hold good with the same degree of certainty. If on the crest of any such dune-accumulation there happens to be formed a swelling or hump, which we may call *A*, then the wind possesses greater power at that spot than it does at *B* or *C*, which are situated lower. The sand is there more exposed, that is less compact, and less sheltered; hence it is conceivable that such spots will advance at a more rapid rate. But if this is the case, it will not be long before *A* is levelled down by the wind to the same elevation as *B* and *C*. And a similar process is repeated on every swelling throughout the whole of the long crest, the result being that the advance takes place by, as it were, irregular forward jerks, though, when the line is considered as a whole, the advance is tolerably even throughout, the only exceptions being the places where cross-thresholds occur.

There exist in fact too many proofs of the *de facto* progressive movement of continental dune-masses for anybody seriously to doubt it. Most beautiful examples may be seen in those parts of the desert that are crossed by the Trans-Caspian Railway. With regard to them Walther writes as follows, his words suggesting also an interesting parallel with the conditions that obtain beside the lower Tarim, as well as a proof of the part which large bodies of water play in the disposition of sta- tionary drift-sand:

»Mit einer Geschwindigkeit von 20 m. an einem stürmischen Tage wandern einzelne Sandberge nach Süden; aber die Durchschnittsgeschwindigkeit des Sandmeeres scheint nur etwa 6 m. pro Jahr zu betragen. Jedenfalls gelangt der Sand mit dieser jährlichen Intensität an die Bahnlinie der transkaspischen Eisenbahn und an das Ufer des Amu-darja. Auch dieser ist ein sehr schlammreicher Fluss, und auch er hat ein steiles rechtes Ufer dessen Steilwand durch die Strömung in 20 Jahren einen Kilometer nach NO. zurückweicht, während eine mehrere Kilometer breite Fläche auf dem linken Ufer in jedem Frühjahr weithin überschwemmt wird. Der von Norden herandrängende Sand der Kisilkum stürzt in das Wasser, wird eine Strecke stromabwärts getrieben und bei Hochwasser, vermischt mit dem sandigen Flusschlamm, auf dem linken Ufer wieder abgesetzt.»*

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* *Gesetz der Wüstenbildung*, p. 119.