and they are remarkably pure, argillaceous matters being nearly always absent. But the formation of sand is also promoted by fluviatile mud. The San-ta-ho and the Su-la-ho both deposit arenaceous mud during their high-water period.

»In der Gegend von An-si-fan befindet sich nun das vielfach verzweigte Kanalnetz zur Bewässerung gerade im Sande des Inundationsgebietes und entlang dieser Kanäle sehen wir die bei Reinigung derselben hoch aufgeworfenen Sanddämme, die dann später von den Winden so energisch angegriffen werden, dass die Landleute sich von den schädlichen Sandwehen durch Baumpflanzungen nicht genug schützen können.«*

Finally he mentions a carboniferous sandstone and a conglomerate in certain districts that furnish a third variety of drift-sand.

The truth is, that the drift-sand in different parts of a large basin are derived from different sources, and under the influence of the wind the various products blend together in the marginal regions into a more or less homogeneous substance. On the other hand it is doubtful how far the two small streams named above are powerful enough to form sand in the way suggested. If that were so, then a powerful stream like the Amu-darja ought to produce dunes of colossal dimensions, whereas the dunes it does form cannot be compared with the dunes that exist in other regions of Central Asia. The geographical distribution of the Transcaspian sandy deserts suggests the erroneous view that they are connected with the rivers. The sands there are travelling southwards at the rate of 6 m. a year, and the Amu-darja at the rate of 50 m. in the year, towards the north-east; hence it is not surprising to find the Desert of Kara-kum on the south-west of the river. Pretty much the same relations obtain in the case of the adjacent Sir-darja, which likewise has a sandy desert to the south-west of it, namely the Kisil-kum. Still farther to the north-east we have the river Tschu, and south-west of it is the smaller desert of Ak-kum. Thus there obtains, it is evident, a physico-geographical law, to the effect that each river appears to give rise to its own sandy desert. Now the rivers which Walther quotes as presenting the most striking exemplifications of the power of fluvial dune-formation are the Amu-darja and the Sir-darja, for both of them bring down enormous quantities of sand from the regions in which they have their sources. »Von März bis Juli steigt das Wasser um 3 m. und überschwemmt weithin das Ufer, um seinen grauen sandigen Schlamm darüber hinzubreiten. Sobald das Wasser des Jaxartes fällt, trocknet der heftige heisse Nordwind die Uferebene und bläst allen Staub und alle Schlammteilchen davon. Den übrig bleibenden, gereinigten Sand aber schüttet der Wind zu Dünen auf, und aus dem Ufergelände steigt die Sandwüste Kysyl-kum hervor.«**

Upon reaching the right bank of the Amu-darja the dunes of the Kisil-kum plunge into the river, and reappear a short distance lower down as alluvial formations under the left bank. Did the river not exist, there would be nothing to prevent the dunes from travelling on without interruption; but since the river does exist, there results a break in the continuous advance of the dunes, in that the sand is re-deposited after the dunes are violently broken down; yet they are soon re-created

* *Op. cit.*, p. 521.
** *Gesetz der Wüstenbildung*, p. 119.