

between the Terek and the Koktan is, near Turug-at-bela, about eight miles wide, the distance between the two ranges diminishing westward, while in the opposite direction it must soon more than double. Judging from the arrangement of the pebbles, which, as already noticed, are half derived from limestone, the direction of the old drainage must have been from west to east, and must have formed the headwaters of the Aksai river, which on the maps is recorded as rising a short distance east of the Chaderkul. Similarly, the gravel valley between the Koktan and Artush ranges indicates a west to east drainage, and its width appears to have approximately averaged 20 miles. About three miles north of Chungterek a secondary old valley exists, also extending from west to east, and is diametrically cut across by the Toyan river. In this valley, which was formerly tributary to the one lying more southward, the gravel beds accumulated to a thickness of fully 100 feet. As the Artush range did not offer a sufficiently high barrier, masses of the gravel passed locally over it or through its gaps into the Kashgar plain, which itself at that time formed a third large broad valley.

Thus, at the close of the volcanic eruptions in the hills north of Chakmák, we find three river systems all flowing eastward, and made more or less independent of each other by mountain ranges, about which it would, however, not be fair to theorize (in the present state of our knowledge) on the causes of their assumed relative position. It must have been at that time that the pebbles of protogine were brought down from some portion of the hills lying to the west; and it would be interesting to ascertain whether or not this rock is anywhere in that direction to be met with *in situ*. When the turbulent times of Volcan's reign became exhausted and tranquillity was restored, the whole country south of the axis of the Thian Shan must have greatly subsided, and the wider the valleys have been the more effectively was the extent of subsidence felt. To support this idea by an observation, I may notice that north of Chungterek, at the base of the Koktan range, the Artush beds have entirely disappeared in the depth, and the gravel beds overlaying them dip partially under the Trias limestone, a state of things which cannot be explained by denudation, but only by subsidence and consequent overturning of the older beds above the younger ones. A similar state of things is to be observed on the Terek range, where the young tertiary limestone conglomerate is in some places of contact overlain by the much older dolomite. Now, if the broad valley of the Kashgar plain sank first, and gradually lowest, as it in all probability did, we find a more ready explanation of the large quantities of loose gravel pouring into it and accumulating at the base of the Artush range.

The sinking in of the volcanic centre north-west of Chakmák first appears to have drained off the former head of the Aksai river, making it the head of the Toyan instead; and to the north of the Terek ridge it was most probably the cause of the origin of the Chaderkul. The subsidence of the country followed in the south, making it possible for the united Suyok and Toyan rivers to force their passage right across the Koktan range, strengthen the Artush river, cut with facility through the Artush range, and join the Kashghardaria. While thus indicating the course of the comparatively recent geological history of the ground, it must be, however, kept in mind that this change in the system of drainage had no essential effect upon the direction of the hill ranges. This, dating from much older times, was mainly an east-westerly one, following the strike of the rocks which compose the whole mountain system.

KASHGAR, }
The 16th January 1874. }

SECTION V.

The Altun Artush considered from a Geological point of view, by DR. F. STOLICZKA, PH.D.
(Veni sed non vidi.)

As soon as the most important political business had been concluded by the signing of the Commercial Treaty by the Amir, Mr. Forsyth expressed a wish to visit the renowned tomb of Sultan Artush. The King accorded his permission, and instructed the Hakim, Mahomed Khoja, to assist us in travelling over the province under his care, to whatever extent Mr. Forsyth might desire.