

By the end of the Tertiary era erosion and deposition had so far lowered the mountains and filled the basins that the country was in a stage of late maturity or even of old age. Considerable warping had taken place during the preceding period, and perhaps was still going on, but the rate was so slow that even the languid erosion of late maturity was able to keep pace with it. At the beginning of the Quaternary era, however, there was a revival of internal activity which manifested itself chiefly along the lines of movement of earlier times. Warping and some faulting then took place so rapidly and so recently that the forms to which they gave rise still dominate the topography, and the effects of erosion are chiefly noticeable in the young valleys. By these movements Central Turkestan was divided into its present physiographic provinces. One province, the Tian Shan plateau, is essentially a broad, flattened arch, on the top of which a number of minor warpings give rise to lofty plateau-like ridges surrounding elevated basins. A second province, the Alai Mountains, is a similar arch, except that it is narrower and lacks the minor corrugations on the top. Both of these provinces are characterized by very precipitous young valleys, between which are tilted and well-preserved portions of the Tertiary peneplain. The two other provinces are basins, those of Kashgar and Fergana, the flat floors of which have for ages been regions of deposition. In the Fergana basin deposition has for the present ceased, but in the Kashgar basin it is still progressing actively.

The recent geological history of Central Asia has been controlled by a series of climatic oscillations between conditions of relative warmth to those of relative frigidity. Evidence of these changes is found in phenomena of three distinct types associated with the headwaters, the trunks, and the lower ends of the rivers. In the high mountains many headwater streams flow from glaciers which in ancient times were much expanded so as to deposit moraines at considerable distances down the valleys. The moraines show that the ice advanced five times during as many glacial epochs, and that between the advances there were epochs of retreat which must have been almost as warm as the present, if not warmer. The moraines further show that the glacial epochs steadily decreased in intensity from first to last, and, although less clearly, that the interglacial epochs correspondingly decreased in length. Along their middle course the streams, almost without exception, flow in terraced valleys. The only adequate explanation for these seems to be a series of decreasing climatic oscillations from cold epochs on the one hand, when increased weathering overloaded the streams and caused them to aggrade and broaden their valleys, to warm epochs on the other hand, when the streams cut narrow canyons in the bottoms of the previously formed flood-plains, thus producing terraces. The number of the terraces does not agree precisely with the number of the old moraines, but the disagreement is easily explicable by a simple expansion of the theory of climatic changes so that it shall include a series of increasingly severe glacial epochs preceding the epochs of the decreasing series. In other respects the agreement of the terraces and the moraines seems very close. The former as well as the latter indicate not only that there were oscillations from one extreme of climate to the other, but that in intensity as well as in length each succeeding period was less than its predecessor, for the terraces decrease steadily in breadth and