

aridity, under the diminished precipitation and the lessening to disappearance of the ameliorating climatic reaction of the once-expanded water areas, was the shrinkage of the loess zones. The grassy steppes, which had once teemed with life and permitted the distribution of ruminants and the horse across all Asia to Europe, gradually became broken up into disconnected areas by the increased intensity of desert conditions. The expanding deserts cut off the connection between the faunae of southern Turkestan and Persia on the one hand and those of Europe on the other, and allowed the evolution of regional varieties. And there must have been a similar reaction upon the distribution of man.

After this, a continued progress towards extreme aridity advanced the desert sea of sands till its dune-waves, rolling even nearer to the mountain, completely submerged long stretches of the narrowed loess-zone between the now restricted deltas at the mouths of mountain streams. The teeming herds of ruminants and horses disappeared over vast areas, and life was restricted to the mountains and to the borders of the few remaining streams and to the deltas.

The phenomena observed in different parts of Turkestan were rightly supposed to have not only local validity, but to have been the same all over Central and High Asia.

It seems only reasonable to suppose that epochs of increased glacial conditions were coincident on both sides of the Trans-Alai range and in neighbouring regions. In the Great Alai Valley and on the Pamir, we have one class of moraines of similar antiquity and extent, another of similar freshness and extent and indications of a third still later class of little extent. Evidence thus places each class on the Pamir as contemporary with its respective similar class in the Great Alai Valley.¹

The uniformity of the terrace phenomena over vast areas supports, according to HUNTINGTON, the hypothesis that they were due to changes of climate. In Persia, Transcaspia, and Russian Turkestan he found that »the terraces of the main valleys leading from the higher mountains present a marked degree of uniformity in structure, arrangement, number, appearance, and relative size«. This was true for the Kwen-lun as well as for the Thian-Shan. »From Persia on the west to China on the east the typical series of terraces consists of three which are old and large and comparatively dissected, two which are much smaller, younger and better preserved, and a still smaller one, often absent, which may be called incipient.« There are sometimes traces of still older terraces.²

We are apt to think of the Glacial period as, primarily, a time of intense glaciation. Such a view is inadequate. Glaciation was a phenomenon whose distribution in space was limited to the northern half of Europe and North America, and to a few elevated regions in other parts of the world. Its distribution in time was limited to the five or more glacial epochs which formed half of the Glacial Period, the other half being composed of interglacial epochs, during which the climate was so far ameliorated that the glaciers retired as far as their present position, or farther. Thus the Glacial period was, primarily, a time

¹ Raphael Pumpelly: *Explorations in Turkestan with an account of the Basin of Eastern Persia and Sistan*. Washington 1905, p. 145.

² Ellsworth Huntington: *The Vale of Kashmir*. *Bulletin of the American Geographical Society*. Vol. XXXVIII, No. 11, 1906, p. 657 *et seq.*