

enormous block of mountain folds which originally constituted the Himalaya (incl. Transhimalaya), the mighty valleys of the Gartok-Indus, the Satlej and the Tsangpo along the latitudinal axis of the system were chiefly formed by erosion of running water. Only by these valleys was the Transhimalaya separated from the Himalaya. Hennig, however, does not deny the possibility that these valleys were originally and partly traced as fold-troughs or were due to other orogenetic causes, and that the rivers then had only to continue to cut out the depressions. However, from geological facts Dr. Hennig regards the valleys separating Transhimalaya from Himalaya as erosive valleys and not as tectonic or merely orogenetic valleys.<sup>1</sup>

In Hennig's opinion the comparatively even lake depression north of Transhimalaya, as a rule consists of the same sedimentary and eruptive formations as Transhimalaya itself. It is consequently not to be regarded as a depression formed by denudation as in the case of the depression south of Transhimalaya. He thinks that the depression including Tengri-nor, Dangra-yum-tso, Nganglaring-tso, etc., is a folding-trough of the same nature as those separating other mountain systems of Tibet to the north of the Transhimalaya.

Hennig has thus proved that also the post-eruptive Oligocene and Pliocene sandstone formations have taken part in the folding procedure of the Transhimalaya; consequently the folding activity of the mountain system continued to the end of the Tertiary epoch. Therefore the folds of the Transhimalaya are as young as those of the Tibetan plateau-land, a fact that is not at all interfered with by the different stretching of the Transhimalayan ranges.

The same process has been explained by H. H. HAYDEN in the following words<sup>2</sup>: »Until a comparatively recent date in the geological time-scale — the middle Tertiary epoch — all the northern part of what is now the Himalaya, and probably the whole of Tibet were covered by a great sea, in which deposition of sediment had continued for a vast period. At length, owing to forces the origin of which we can at present only conjecture, a period of crust-movement set in and the floor of the Tibetan sea began gradually to rise and to be thrown into a series of long parallel wave-like folds.

»As the crests of the earth-waves rose from the waters of the sea, they were eroded by rain and weather, and the rising land became broken and irregular: drainage basins were carved out of its flanks and a river system, composed of 'transverse' valleys, was gradually developed. As elevation continued, the troughs of the folds emerged and a series of 'longitudinal' valleys was established at right angles to the transverse valleys and parallel to the longitudinal axes of the folds. From a combination

<sup>1</sup> He therefore cannot agree with the views set forth by Dr. FELIX OSWALD in his *Transhimalaya and Tibet*, Science Progress, No. 17, July 1910. The interesting map accompanying this article is here reproduced as Pl. LXXII.

<sup>2</sup> A Sketch etc. . . ., p. 47.