

South of, and more or less parallel with this, comes the Ladákh range, which may be regarded as commencing near the junction of the Sháyak and Indus rivers and running thence south-eastwards along the north side of the Indus valley. This range, which has a most marked individuality both geographically and geologically, is breached by the Indus at about 150 miles from its north-westerly termination in 79° of east longitude. The range continues as far as Hanle, forming there the south, instead of the north, side of the Indus valley, but its further continuation is imperfectly known.

The Zanskar range appears to owe its existence quite as much to the accident that it forms the watershed between the Indus and Chenáb drainage, and has consequently been less denuded than the regions on the north and south, as to any special elevation it has undergone.

The outermost of the principal ranges is the Pir Panjál-Dháoladhár Range.

I have to return to the following important passage, already quoted in Vol. III:

Nothing definite can be said of the south-easterly continuation of the range. The Pir Panjál, Dháoladhár and Zanskar ranges may be regarded as coalescing and becoming continuous with the great range of snowy peaks, while the Ladákh and Karakoram ranges coalesce to continue as the range of mountains which runs north of the great longitudinal valley of the upper Indus, Sutlej, and Sanpo rivers. It may, however, well be doubted whether either of these ranges has a real continuity along the whole length of the Himálayas and it is altogether more probable that, whether we regard them structurally or according to the accidents of the existing contour of the ground, they consist of a series of comparatively short ranges overlapping each other at their extremities. The final classification of the minor ranges of the great Himálayan system of mountains must wait for a more detailed geological and geographical knowledge than is at present available.

Though it is impossible to give any definite idea of the detailed orography of the Himálayas it is possible to divide the mountains into orographical regions sufficiently distinct from each other, even if their exact boundaries are somewhat indefinite. The innermost of these is the upland of Tibet, characterized by great elevation and a dry climate with its concomitant of very extensive accumulations of detritus in the valleys.

All the principal rivers draining from the Himálayas have their sources to the north of the line of highest peaks. They cross this zone of special upheaval in deep valleys.

Oldham regards it as probable that the first effect of the commencement of the upheaval of the Himálayas was to establish a pair of longitudinal valleys along its northern face, whose drainage escaped round the extremities of the upheaval, and that in the first instance the whole of the drainage north of what is now the line of highest peaks, escaped by these rivers. As the mountains were upheaved the gradients of the rivers flowing directly to their southern margin became steeper than those of the longitudinal valleys north of the main range, the erosive power of the streams increased, and they were able to cut back through the line of maximum upheaval and rob part of the drainage which originally flowed east and west to the gorges of the Indus, Sutlej, and Sanpo.

From the maps of northern Kumáun and Garhwál and from the accounts of travellers he gathers that the slopes on the southern side of the passes are much steeper than on the northern: »the erosion of these slopes would consequently be more rapid, and as it progressed the watershed would gradually be forced northwards.»