

a dangerous temporary lake may be formed. Thus the Niaro glacier gave birth to a lake 200 feet deep, which fortunately discharged gradually during a month.

On the other side of the upper Biafo the snowy peaks Trans-Indus 2 and Trans-Indus 4 were visible. On the Kiro Ganse a road goes up to Nushik La, which is the northern watershed of the Basha-Braldoh. The whole district he describes as one great area of ice-bound mountains, with long trains of ice debouching out into the drainage lines. And he observes:¹

The present thickness of the ice is a point not easily determined; but judging from striae in the sides of ravines from which glaciers have retired, from 300 to 400 feet is not an exaggerated allowance for what they once have been.

Godwin-Austen was struck by great changes of temperature »in our own times». He saw many proofs of this. Such were the enormous terminal moraines which in many places abut on the larger rivers, down to which point glaciers must once have descended, »and which in some cases must have rivalled in length the present ones of the Mustakh Range». Such proofs were also the long furrows and striations in solid rock. Amongst proofs of recent changes he mentions:

Many Passes which were used even in the time of Rajah Ahmed, Shah of Skardo, are now closed. The road to Yarkund over the Baltoro glacier which before his time was known as the Mustakh, has by the increase of the ice near the pass become quite impracticable. The men of the Braldoh valley were accordingly ordered to search for another route, which they found in the present pass, at the head of the Punmah glacier above Chiring. Again, the Jusserpo La can now be crossed only on foot; whereas in former times ponies could be taken over it. The pass at the head of the Hoh Loombah is now never used, though there is a tradition that it was once a pass; no one, however, of the present generation that I could hear of had ever crossed it.

He also quotes several cases in which certain large glaciers have obviously advanced in later years. These oscillations in the glaciation are very interesting; to the same class of phenomena belong also the oscillations in the Kumdan glaciers with which we have dealt in Chapter XXVII, Vol. II of this work.

After the paper² of GODWIN-AUSTEN, Dr. FALCONER, who was a veteran in the field, gave some interesting commentaries.³ He said that all the best observers, THOMSON, JACQUEMONT, and others, had been of the opinion that there was but one great system of mountains. There was no such thing as any break of a mountain-range, or any distinct mountain chains. There were rivers cutting across them, but, regarded in one grand aspect, they constituted a series or mass of mountains.

Viewed then, in this light, there were two great ranges which culminated to especially great altitudes, and which bounded the Indus river to the south and the north; and this being one of the points where the Himalayan chain attained its greatest elevation, there the glacial phenomena were developed in most grandeur and upon the loftiest scale.

¹ *Ibidem*, p. 50.

² It was read before the Royal Geographical Society, Jan. 11th. 1864.

³ *Proceedings Royal Geographical Society*. Vol. VIII. 1863-64, p. 38 *et seq.*