percolation through the porous parts of the moraine, and not by a stream overflowing that barrier. Such a glacier-lake Dr. Hooker actually found in existence near the head of the Yangma valley in the Himalaya. It was moreover partially bounded by recently formed marginal terraces or parallel roads, implying changes of level in the barrier of ice and moraine matter.\*

It has been sometimes objected to the hypothesis of glacierlakes, as applied to the case of Glen Roy, that the shelves must have taken a very long period for their formation. Such a lapse of time, it is said, might be consistent with the theory of pauses or stationary periods in the rise of the land during an intermittent upward movement, but it is hardly compatible with the idea of so precarious and fluctuating a barrier as a mass of ice. But the reader will have seen that the permanency of level in such glacier-lakes has no necessary connection with minor changes in the height of the supposed dam of ice. If a glacier descending from higher mountains through a tributary glen enters the main valley in which there happens to be no glacier, the river is arrested in its course and a lake is formed. The dam may be constantly repaired and may vary in height several hundreds of feet without affecting the level of the lake, so long as the surplus waters escape over a 'col' or parting ridge of rock. The height at which the waters remain stationary is determined solely by the elevation of the 'col,' and not by the barrier of ice, provided the barrier is higher than the 'col.'

But if we embrace the theory of glacier-lakes, we must be prepared to assume not only that the sea had nothing to do with the original formation of the 'parallel roads,' but that it has never, since the disappearance of the lakes, risen in any one of the glens up to the level of the lowest shelf, which

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<sup>\*</sup> Hooker, Himalaya Journal, vol.i. also profited by the author's personal p. 242; ii. pp. 119, 121, 166. I have explanations.