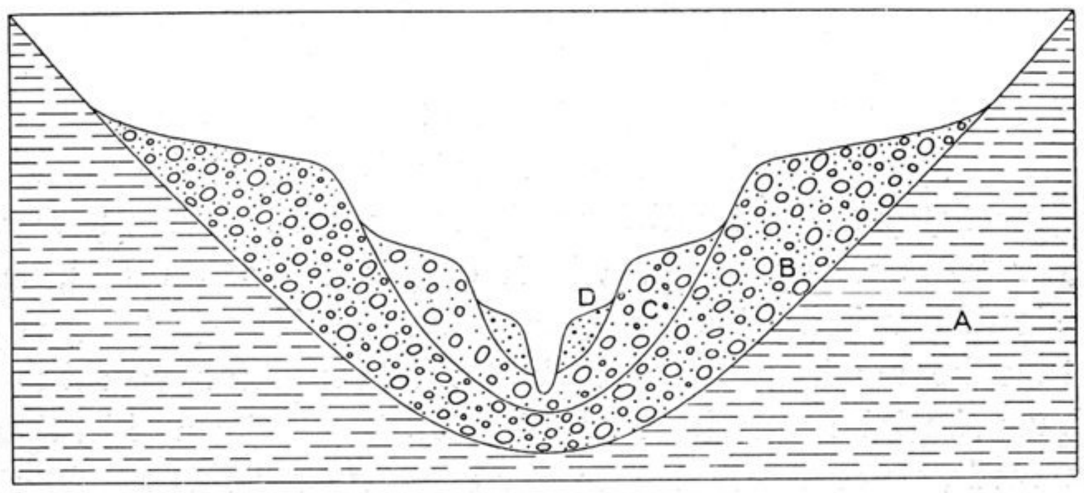
colder and warmer epochs, a series of terraces would be formed closely resembling those found to-day, provided only that the epochs constantly diminished in intensity and duration. Those streams in which a graded condition had been reached before this series of climatic changes began would have their terraces cut entirely in gravel, while the others would have terraces composed partly of gravel and partly of rock. The streams of this class are as a rule deepening rather than widening their valleys.

It is noteworthy that this series of climatic changes corresponds essentially with the series inferred from the old moraines, and the agreement of the two greatly favors the theory that accounts for both. In this connection two points need emphasis. In the first place, it has been shown that the moraines give evidence of interglacial epochs alternating with glacial epochs rather than of a single glacial



A—limestone. B, C, D—successive fillings of gravel.

Fig. 144.—Cross-section of the Ispairan Valley, showing successive periods of cutting and filling.

period which came to an end with a series of partial glacial retreats separated by intervals of glacial rest. The terraces show even stronger evidence of the same conclusion. The deposition of gravel and broadening flood-plains on the one hand and the cutting of narrow trench-like valleys on the other do not represent successive stages of the same kind of climate change; they represent contrasted climatic conditions—namely, the systematic alternation of colder and warmer climates. In the second place, the terraces decrease in width, height, and preservation in the same way that the moraines decrease in size and in the degree of weathering and erosion to which they have been subjected. In both cases the oldest examples are large and well developed, but not very well preserved; the others are successively smaller and better preserved. All these points of agreement increase the probability that the theory of a glacial period consisting of interglacial epochs is correct. One difficulty presents itself—the number of terraces and of moraines does not always agree—the maximum of the one is nine, of the other only five. Part of this discrepancy is due, as has been already explained, to the fact that some of the terrace series are complicated by one or two minor terraces, which seem to be due merely to ordinary swinging of the streams; but even with due allowance for this complication, there seems to be some evidence of a sixth unexplained terrace. It may therefore be suggested that the first of our glacial epochs was not actually the first, but merely the maximum, and was preceded by others which have left no trace save in doubtful terraces. This, however, is at present pure conjecture.