

half a mile beyond, a fine fall of 30 feet; horizontal beds of white sandstone cut precipitously for a distance of 150 yards. Rock appears to be very soft, and easily crumbles; surface on east or north side of fall, near the edge, well smoothed and very distinctly striated, striae S. 20° E.

August 18.—At last we come on a change from the everlasting sandstone, which formation continues the whole way up the Ark-e-leenik river. At about 12 miles the western branch cuts through a thick bed of gabbro (?), which extends in the form of a deepish gorge for 200 yards; this rock is very massive, beds dipping south at an angle of 60°. Rock varies in character, some of it having the appearance of a foliated rock on the outside. Quartz very much in the ascendant in some cases; biolite in others. In places the rock is largely composed of a flesh-coloured stuff, with only a thin layer of the matrix rock appearing. A dark green rock is much in evidence in many cases. Twenty feet or more of this formation is cut through by the river at this spot. Half a mile beyond, the confounded white sandstone appears again; I thought that we had seen the last of it. Huge chunks are piled around in a confused mass in a small gorge, the rock itself also being seen *in situ*.

August 19.—A very short distance beyond this small gorge, the river flows through a deep gorge 40 to 100 feet deep. At the commencement of this gorge, and extending for a distance of 500 yards, the beds cut through are now the familiar white and reddish sandstones containing quartzite pebbles, mostly small; same rock on both sides of the river. On the north-east side beds are thin and horizontal; on the south-west side beds are thick and falsely bedded. Beyond this sandstone, which extends up 500 yards, the formation changes; Laurentian gneiss appears. The junction of the two formations is not very distinct, for a small landslide has taken place at this spot, but the difference in the colour of the soil is very apparent; the white sandy soil of the sandstone and the reddish purple of the new formation lie side by side; the gneiss extends up the gorge for a mile, and above it again crops out, extending also up small side gulches which adjoin the river. This rock has a very distinct foliation on the outside, more so than when broken. Breaks with a slaty cleavage. It is much broken up, up-ended, and generally jumbled about in the gorge, but dips east at a very high angle, almost vertical. Width of river at this point, 860 feet. Loose rocks of gneiss scattered around for 2 miles beyond the gorge.

August 20.—Travelled 12 miles up the river. Gneiss crops out all along in bed of river and at several other places, varying in character in different places.

August 21.—Proceeded up river to small lake. Rocks here, red granite (fels-pathic); very rocky country. Took a long walk in afternoon; rocks all the same—red granite *in situ*, and scattered boulders and fragments. Gneiss does not appear *in situ*, but boulders and fragments of it, irregular, angular, and sharp-edged; plentiful.

August 22.—Fourteen and a half miles up river. Land very flat and sandy, some high sand hills and knolls in view. At 5 miles, beds of red granite are cut by a thick vein of white quartz, in which nothing is visible. Vein running north and south (true) in form of a small ridge 70 yards by 15 yards. This was on south side of river. One and a half mile further up, outcrop of dark grey rock; very brittle, and splits up into small sections when tapped with the axe. Outcrop in bed of a small stream, coming in from the south; exposure about 40 yards in extent, dipping S. 30° E. at an angle of 60°. At 12 miles river cuts through a bed of Laurentian or granitoid gneiss, mostly grey in colour, but some reddish; horizontally bedded, smoothed, but not striated. Noticed several small outcrops of this rock yesterday and this morning, but the chief formation is the red granite. The curious balanced stones observed to-day for the first time.

August 25.—Travelled 6 miles. Barren land here terribly rocky—miles of loose rocks and boulders; red granite and granitoid gneiss. But I had little time to geologize, for I had to hunt up the blessed river, which we had lost in a lake.