

this drift, (quartz, granite, syenite, hornblende, porphyry, basalt, and the like,) could not be effected in a short time, nor probably by any one land-torrent, or sea-current: so that we are led to the admission of long action, previous to the great transport, or subsequently, or both; and that not merely in progressive motion in straight lines, but by gyrations in basin-like spots which abundantly show themselves in the regions of which we have been speaking. The heavier fragments, having by the force of gravity originally taken their places at the bottom of the icy masses, would, upon the melting away of the under-surface, present sharp angular points; for when they were first enveloped in the ice they had been just broken off from their parent rocks. These under surfaces, acting under the pressure of many thousand tons weight, rubbed and ground smooth the rocks upon which they slid; and their points made grooves, or deep scratches, which present themselves to the laborious observer and are truly inscriptions "graven in the rock for ever," and furnishing unerring indications of the direction in which those vast masses were carried. The torrents must soon have ceased, the waters subsiding into the seas and lakes in the respective regions. The icebergs grounded; and being now in climates which kept them continually melting, at last disappeared, and the blocks, often exhibiting their original sharpness of outline, remain to this day, attesting, by the identity of the stone, which is often remarkably characteristic, the mountain-ridges whence they had been torn. Those mountain-ridges are frequently within a few miles, but often at the distance of some hundreds, from the areas over which the derived pebbles and boulders are spread.

Here, then, we have evidence of the origin and the direction, the breadth, (though the edges which would show the boundary are often lost in the ocean,) and the