

stamped the lithological character of its own mountainous region upon the lower part of its hydrographical basin by covering it with its peculiar Alpine drift. In like manner the old extinct glacier of the Limmat, during its gradual retreat, has left monuments of its course in the Lake of Zurich in the shape of terminal moraines, one of which has almost divided that great sheet of water into two lakes.

The ice-work done by the extinct glaciers, as contrasted with that performed by their dwarfed representatives of the present day, is in due proportion to the relative volume of the supposed glaciers, whether we measure them by the distances to which they have carried erratic blocks, or the areas which they have strewed over with drift, or the hard surfaces of rock and number of boulders which they have polished and striated. Instead of a length of five, ten, or twenty miles and a thickness of 200, 300, or at the utmost 800 feet, those giants of the olden time must have been from 50 to 150 miles long, and between 1,000 and 3,000 feet deep. In like manner the glaciation, although identical in kind, is on so small a scale in the existing Alpine glaciers as at first sight to disappoint a Swedish, Scotch, Welsh or North American geologist. When I visited the terminal moraine of the glacier of the Rhone in 1859, and tried to estimate the number of angular or rounded pebbles and blocks which exhibited glacial polishing or scratches as compared to those bearing no such markings, I found that several thousand had to be reckoned before I arrived at the first which was so striated or polished as to differ from the stones of an ordinary torrent-bed. Even in the moraines of the glaciers of Zermatt, Viesch, and others, in which fragments of limestone and serpentine are abundant (rocks which most readily receive and most faithfully retain the signs of glaciation), I found, for one which displayed such indications, several hundreds entirely free from them. Of the most opposite character were the results obtained by me