

found at the lower end of the ice being called terminal moraines. Such heaps of earth and boulders every glacier pushes before it when advancing, and leaves behind it when retreating. When the Alpine glacier reaches a lower and a warmer situation, about 3,000 or 4,000 feet above the sea, it melts so rapidly that, in spite of the downward movement of the mass, it can advance no farther. Its precise limits are variable from year to year, and still more so from century to century; one example being on record of a recession of half a mile in a single year. We also learn from M. Venetz, that whereas, between the eleventh and fifteenth centuries, all the Alpine glaciers were less advanced than now, they began in the seventeenth and eighteenth centuries to push forward, so as to cover roads formerly open, and to overwhelm forests of ancient growth.

These oscillations enable the geologist to note the marks which a glacier leaves behind it as it retrogrades; and among these the most prominent, as before stated, are the terminal moraines, or mounds of unstratified earth and stones, often divided by subsequent floods into hillocks, which cross the valley like ancient earth-works, or embankments made to dam up a river. Some of these transverse barriers were formerly pointed out by Saussure below the glacier of the Rhone, as proving how far it had once transgressed its present boundaries. On these moraines we see many large angular fragments, which, having been carried along the surface of the ice, have not had their edges worn off by friction; but the greater number of the boulders, even those of large size, have been well rounded, not by the power of water, but by the mechanical force of the ice, which has pushed them against each other, or against the rocks flanking the valley. Others have fallen down the numerous fissures which intersect the glacier, where, being subject to the pressure of the whole mass of ice, they have been forced along, and either well