number of smaller fragments. In the spring a rapid thawing of the winter snows often causes accidental torrents of extreme violence. If the melting is slow, water insinuates itself into the smallest fissures of the rocks, freezes there, and rends asunder the most refractory masses. The blocks detached from the mountains are sometimes of gigantic dimensions: we have found them sixty feet in length, and those measuring thirty feet each way are by no means rare in the Alps."*

Thus, the action of aqueous infiltrations followed by frost, the chemical decomposition which granite undergoes under the influence of a moist atmosphere, degrade and disintegrate the rocks which constitute the mountains enclosing the glacier. Blocks, sometimes of very considerable dimensions, often fall at the foot of these mountains on to the surface of the glacier. Were it immovable the débris would accumulate at its base, and would form there a mass of ruins heaped up without order. But the slow progression, the continuous displacement of the glacier, lead, in the distribution of these blocks, to a certain kind of arrangement : the blocks falling upon its surface participate in its movement, and advance with it. But other downfalls take place daily, and the new débris following the first, the whole form a line along the outer edge of the glacier. These regular trains of rocks bear the name of "moraines." When the rocks fall from two mountains, and on each edge of the glacier, and two parallel lines of débris are formed, they are called lateral moraines. There are also median moraines, which are formed when two glaciers are confluent. in such a manner that the lateral moraine, on the right of the one, trends towards the left-hand one of the other. Finally, those moraines are frontal, or terminal, which repose, not upon the glacier, but at its point of termination in the valleys, and which are due to the accumulation of blocks fallen from the terminal escarpments of glaciers there arrested by some obstacle. In PLATE XXXI. we have represented an actual Swiss glacier, in which are united the physical and geological peculiarities belonging to these enormous masses of frozen water: the moraines here are lateral, that is to say, formed of a double line of débris.

Transported slowly on the surface of the glacier, all the blocks from the mountain preserve their original forms unaltered; the sharpness of their edges is never altered by their gentle transport and almost imperceptible motion. Atmospheric agency only can affect or destroy these rocks when formed of hard resisting material. They

* Revue des Deux Mondes, p. 925 ; March I, 1847.