

Here, placed nearly above the region of vegetable or animal existence, and surrounded by the sublimest objects in nature, the deep silence which prevails around is truly solemn and impressive; but it is broken from time to time, by sounds like the rolling of distant thunder, or by a nearer and louder crash, which is repeated by the echoes from rock to rock. These sounds proceed from the falling of avalanches, or from glaciers splitting and discharging the loose rocks upon their surface, or from *éboulements* of rock, detached from the bare and exposed sides of the pinnacles and *aiguilles*. The fragments generally fall into the elevated mountain valleys, and are scattered over the surface of the higher glaciers, which extend from thence into the lower Alpine valleys. As the glaciers in these valleys are gradually melting during summer, the ice above progressively moves downward, bearing with it the cargoes of stones on its surface, which it discharges in heaps at its feet and sides. These accumulations of stones are called *morains*. The destruction of granitic and schistose mountains it has been before observed, is generally effected by water penetrating between the fissures, becoming suddenly expanded by frost. The overthrow of calcareous rocks is effected in a different manner; and the vast *éboulements* which they occasion, are more terrific and destructive, than the *éboulements* from the primary mountains, as they generally take place in more thickly inhabited districts.

The destruction of the calcareous mountains in the Alps, depends on the peculiar composition and structure of these mountains. In the year 1821, I passed a great part of the summer in examining the calcareous mountains in Savoy, the structure of which was then not generally understood, or at least had not been described, in any geological work that I had met with. It was generally believed, that the calcareous mountains were composed entirely of beds of limestone, with lofty mural precipices on the upper part; and that the lower parts, sloping from these precipices, were formed of the *débris* of the limestone. So far from this being the case, the calcareous mountains of the Alps, which comprise all the English formations, from the magnesian limestone or chalk, alternate, like the English formations, with enormous beds of soft shale and sandstone; and it is to this alternation, that they owe the frequent destruction of the upper parts of the mountains.

If all our English secondary formations, were, by some powerful cause, elevated six or seven thousand feet above their present level, and the beds bent into curves, constituting several ranges of mountains, we should have precisely what is found in the calcareous ranges of the Alps. This arched form of the calcareous mountains is represented, Plate II. fig. 1., and fig. 2. *x, y*. Now, if one thick bed of limestone, or a portion of it, be broken off as at *z*, fig. 2, the action of continued rains on the soft bed on which it rests, will undermine it, until other portions of the limestone will fall down; and