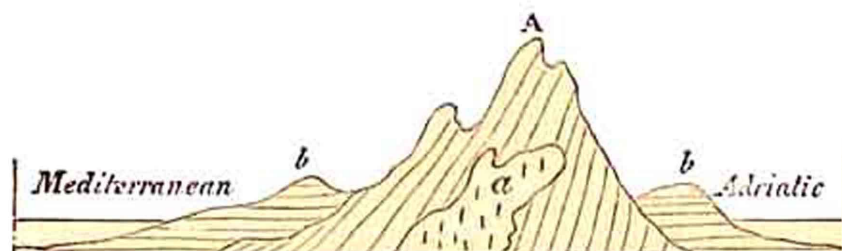


panying diagram, which represents a transverse section across the Italian peninsula. The inclined strata A are the disturbed formations



of the Apennines into which the ancient igneous rocks *a* are supposed to have intruded themselves. At a lower level on each flank of the chain are the more recent shelly beds *b b*, which often contain rounded pebbles derived from the waste of contiguous parts of the older Apennine limestone. These, it will be seen, are horizontal, and lie in what is termed "unconformable stratification" on the more ancient series. They now constitute a line of hills of moderate elevation between the sea and the Apennines, but never penetrate to the higher and more ancient valleys of that chain.

The same phenomena are exhibited in the Alps on a much grander scale; those mountains being composed in some even of their higher regions of the newer secondary and oldest tertiary formations, while they are encircled by a great zone of more modern tertiary rocks, both on their southern flank towards the plains of the Po, and on the side of Switzerland and Austria, and at their eastern termination towards Styria and Hungary.* This newer tertiary zone marks the position of former seas or gulfs, like the Adriatic, wherein masses of strata accumulated, some single groups of which are not inferior in thickness to the most voluminous of our secondary formations in England. Some even of these newer groups have been raised to the height of three or four thousand feet, and in proportion to their antiquity, they generally rise to greater heights, the older of them forming interior zones nearest to the central ridges of the Alps. We have already ascertained that the Alps gained accessions to their height and width at several successive periods, and that the last series of movements occurred when the seas were inhabited by many existing species of animals.

We may imagine some future series of convulsions once more to heave up this stupendous chain, together with the adjoining bed of the sea, so that the mountains of Europe may rival the Andes in elevation; in which case the deltas of the Po, Adige, and Brenta, now encroaching upon the Adriatic, might be uplifted so as to form another exterior belt of considerable height around the south-eastern flank of the Alps.

The Pyrenees, also, have acquired the whole of their present altitude, which in Mont Perdu exceeds eleven thousand feet, since

* See a Memoir on the Alps, by Professor Sedgwick and Sir Rod. Murchison, Trans. of Geol. Soc. second ser. vol. iii., accompanied by a map.