

over which, when the waters are low, fine matter or chemical precipitates are formed. During inundations, the turbid current of fresh water often repels the sea for many miles; but when the river is low, salt water again occupies the same space. When two deltas are converging, the intermediate space is often, for reasons before explained, alternately the receptacle of different sediments derived from the converging streams. (See p. 218.) The one is, perhaps, charged with calcareous, the other with argillaceous matter; or one sweeps down sand and pebbles, the other *impalpable mud*. These differences may be repeated, with considerable regularity, until a thickness of hundreds of feet of alternating beds is accumulated. The multiplication, also of shells and corals in particular spots, and for limited periods, gives rise occasionally to lines of separation, and divides a mass which might otherwise be homogeneous into distinct strata.

An examination of the shell marl now forming in the Scotch lakes, or the sediment termed "warp," which subsides from the muddy water of the Humber, and other rivers, shows that recent deposits are often composed of a great number of extremely thin layers, either even or slightly undulating, and preserving a general parallelism to the planes of stratification. Sometimes, however, the laminae in modern strata are disposed diagonally at a considerable angle, which appears to take place where there are conflicting movements in the waters. In January, 1829, I visited, in company with Professor L. A. Necker, of Geneva, the confluence of the Rhone and Arve, when those rivers were very low, and were cutting channels through the vast heaps of *débris* thrown down from the waters of the Arve, in the preceding spring. One of the sandbanks which had formed, in the spring of 1828, where the opposing currents of the two rivers neutralized each other, and caused a retardation in the motion, had been undermined; and the following is an exact representation of the arrangement of laminae exposed in a vertical section. The length of the portion here seen is about twelve feet, and the height five. The strata AA consist of irregular alternations of pebbles and sand in undulating beds: below these are seams of very fine sand BB, some as thin as paper, others about a quarter of an inch thick. The strata CC are composed of layers of fine greenish-grey sand, as thin as paper. Some of the inclined beds will be seen to be thicker at their upper, others at their lower extremity, the inclination of some being very considerable. These layers must have accumulated one on the other by lateral apposition, probably when one of the rivers was very gradually increasing or diminishing in velocity, so that the point of greatest retardation caused by their conflicting currents shifted slowly, allowing the sediment to be thrown down in successive layers on a sloping bank. The same phenomenon is exhibited in older strata of all ages.\*

\* See Elements of Geology by the Author.