

in the other case, there will be an admixture, and most frequently a predominance, of animals which inhabit salt water. In regard, however, to the distribution of inorganic matter, the deposits of lakes and inland seas are formed under very analogous circumstances, and may be distinguished from those on the shores of the great ocean, where the tides, co-operating with currents, give rise to another class of phenomena. In lakes and inland seas, even of the largest dimensions, the tides are almost insensible, but the currents, as will afterwards appear, sometimes run with considerable velocity.

*Lake of Geneva.* — Lakes exemplify the first reproductive operations in which rivers are engaged when they convey the detritus of rocks and the ingredients of mineral springs from mountainous regions. The accession of new land at the mouth of the Rhone, at the upper end of the Lake of Geneva, or the Lemman Lake, presents us with an example of a considerable thickness of strata which have accumulated since the historical era. This sheet of water is about thirty-seven miles long, and its breadth is from two to eight miles. The shape of the bottom is very irregular, the depth having been found by late measurements to vary from 20 to 160 fathoms.\* The Rhone, where it enters at the upper end, is turbid and discoloured; but its waters, where it issues at the town of Geneva, are beautifully clear and transparent. An ancient town, called Port Vallais (Portus Valesiæ of the Romans), once situated at the water's edge, at the upper end, is now more than a mile and a half inland — this intervening alluvial tract having been acquired in about eight centuries. The remainder of the delta consists of a flat alluvial plain, about five or six miles in length, composed of sand and mud, a little raised above the level of the river, and full of marshes.

Sir Henry De la Beche found, after numerous soundings in all parts of the lake, that there was a pretty uniform depth of from 120 to 160 fathoms throughout the central region, and, on approaching the delta, the shallowing of the bottom began to be very sensible at a distance of about a mile and three quarters from the mouth of the Rhone; for a line drawn from St. Gingoulph to Vevey, gives a mean depth of somewhat less than 600 feet, and from that part to the Rhone, the fluviatile mud is always found along the bottom.† We may state, therefore, that the new strata annually produced are thrown down upon a slope about two miles in length; so that, notwithstanding the great depth of the lake, the new deposits are not inclined at a high angle; the dip of the beds, indeed, is so slight, that they would be termed, in ordinary geological language, horizontal.

The strata probably consist of alternations of finer and coarser particles; for, during the hotter months from April to August, when the snows melt, the volume and velocity of the river are greatest, and large quantities of sand, mud, vegetable matter, and drift-wood are introduced; but, during the rest of the year, the influx is

\* De la Beche, Ed. Phil. Journ. vol. ii. p. 107. Jan. 1820. † De la Beche, MS.