

separated from the next basin by a rocky gorge, once perhaps the barrier of a lake. The river seems to have filled these lakes, one after the other, and to have partially cut through the barriers, some of which it is still gradually eroding to a greater depth. Before, therefore, we can pretend even to hazard a conjecture as to the era at which the principal delta of Lake Lemman or any other delta commenced, we must be thoroughly acquainted with the geographical features and geological history of the whole system of higher valleys which communicate with the main stream, and all the changes which they have undergone since the last series of convulsions which agitated and altered the face of the country.

Lake Superior.—Lake Superior is the largest body of fresh water in the world, being above 1700 geographical miles in circumference when we follow the sinuosities of its coasts, and its length, on a curved line drawn through its centre, being more than 400, and its extreme breadth above 150 geographical miles. Its surface is nearly as large as the whole of England. Its average depth varies from 80 to 150 fathoms; but, according to Captain Bayfield, there is reason to think, that its greatest depth would not be overrated at 200 fathoms*, so that its bottom is, in some parts, nearly 600 feet below the level of the Atlantic, its surface being about as much above it. There are appearances in different parts of this, as of the other Canadian lakes, leading us to infer that its waters formerly occupied a much higher level than they reach at present; for at a considerable distance from the present shores, parallel lines of rolled stones and shells are seen rising one above the other, like the seats of an amphitheatre. These ancient lines of shingle are exactly similar to the present beaches in most bays, and they often attain an elevation of 40 or 50 feet above the present level.

As the heaviest gales of wind do not raise the waters more than three or four feet †, the elevated beaches have by some been referred to the subsidence of the lake at former periods, in consequence of the wearing down of its barrier, by others to the upraising of the shores by earthquakes, like those which have produced similar phenomena on the coast of Chili. The streams which discharge their waters into Lake Superior are several hundred in number, without reckoning those of smaller size; and the quantity of water supplied by them is many times greater than that discharged at the Falls of St. Mary, the only outlet. The evaporation, therefore, is very great, and such as might be expected from so vast an extent of surface.

On the northern side, which is encircled by primary mountains, the rivers sweep in many large boulders with smaller gravel and sand, chiefly composed of granitic and trap rocks. There are also currents in the lake in various directions, caused by the continued prevalence

* Trans. of Lit. and Hist. Soc. of Quebec, vol. i. p. 5. 1829.

† Captain Bayfield remarks that Dr. Bigsby, to whom we are indebted for several communications respecting the geology of the Canadian lakes, was mis-

informed by the fur traders in regard to the extraordinary height (twenty or thirty feet) to which he asserts that the autumnal gales will raise the water of Lake Superior.—Trans. of Lit. and Hist. Soc. of Quebec, vol. i. p. 7. 1829.