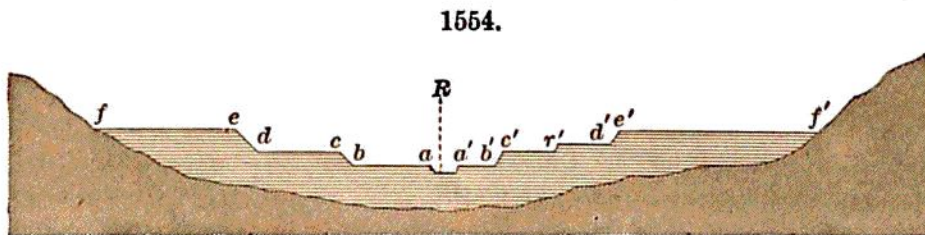


The tributaries of a river, when torrential, often carried into the valley great quantities of gravel and stones, and made river-border deltas on a continuous series of levels, as the deposits rose in height. The materials thus received were stratified in part by the waters of the river, the finer portions being taken up and drifted on to make the finer deposits down stream. The delta-like deposits give local coarseness and irregularity to the beds and somewhat greater firmness, so that, under erosion, they sometimes are made to stand out and look a little kame-like, although strictly of fluvial origin.

Under the abundant supply of water, the width of the flood grounds or river flats in many large valleys became increased to miles, and in some cases to scores of miles. Over such flood plains, through all the progressing deposition and varying velocities of flow in the river channel, there were, as in modern flood plains, areas of relatively quiet waters, where beds of clay or fine earth were formed, giving the valley-formations a great diversity of constitution. Further: rivers in some places became dammed by floating ice and whatever else the waters transported, as now in modern floods; and these dams were the cause of quiet deposits in the waters above them, — that is, of extensive beds of clay and fine sands or earth. Through the two agencies, *subsidence* and *dams*, and perhaps in a few cases elevation of the land toward the mouth of the stream or elsewhere, nearly all the transitions in the nature of the fluvial deposits, from clays to the coarsest kinds, have their explanation. The height of the highest flood plain gives approximately the height of the maximum flood.

The Champlain deposits along valleys or about lakes are usually terraced. A view of the terraces on the Connecticut below Hanover is given on page 195.

The following figure is a generalized section of a terraced valley.



Section of a valley, with its terraces completed.

In this figure, the channel which the river occupies at low water is at R; *ab*, *a'b'*, are the flats either side which become flooded in modern high freshets, — in other words, the flood-grounds; *ef*, *e'f'*, are the flood-grounds of the river (or what is left of them) during the great Champlain floods. The intermediate terrace-plains are other levels, formed either during the rise of the flood, the water while on the increase flowing long, it may be, at certain levels; or during the decline, which also may have taken place by stages, and have been long in progress. Part may be under-water levels; for great streams and lakes, or lake-borders, often have shoals at two or