

the uplifted seashore as the length of the line has to the extent of the old shore line above the present sea level within the limits of the State in a northsouth direction. Imagine a diagonal line passing from the top of the thickened black line on the right hand end to the bottom of the line on the left hand end. Then the inclination of this oblique line will slope at the same angle or rate a mile as does the upper marine limit of the Champlain submergence. The rate of rise of the upper marine limit is on this basis 4.411 feet to the mile to the north.

MARINE DEPOSITS OF THE CHAMPLAIN VALLEY

Lithologically the marine deposits of the Champlain valley are commonly referred to as clays but while this facies of the deposits is most striking in the vicinity of the lake, the area exhibits the normal threefold development of sediments under the transgression of the sea: viz, along the shore line, beaches and bars of pebbles and shingle together with stream deltas of sand; farther off, sandy bottoms; still farther from the shore line, clays.

In the case of the Champlain valley, the normal character of the three belts or zones of marine deposition is largely modified by the composition of the glacial drift previously laid down in the region. Each of the zones above named may exhibit boulders and coarse rubbly material. Furthermore, in the retreat of the sea or rather the rise of the land, each belt in turn has been passed over by the shore of the sea and the processes peculiar to the littoral zone have more or less strewn coarse waste over the sea bottom of the preceding stages. In general, however, there is a cobblestone, shingle, or pebbly zone on the foothills bordering the lake, a sandy zone over the flats at variable distances from the lake shore, and a clay zone adjacent to the lake. The zones are of very variable width on the New York side of the lake, all of them becoming narrower toward the southern contracted end of the present lake.

Out of the sandy and the clay zone rather characteristically rise older deposits of glacial till or gravels, which for a time existed in turn first as shoals and then as wave-washed isles in the receding sea. These hills have generally lost their original outline as drumlins or morainal mounds with kettles. At top a beach or bar has been heaped by waves and gravels and sands have been washed down the sloping sides, the finest sediments being strewn over the