

1 to 2 inches in diameter overlie the clays giving place above to glacial sands. At the northern point, there is reason to believe that the till is banked up against the clays if it does not overtop them. Probable evidence of the action of the ice sheet is found in the highly crumpled condition of many layers of clay; but this crumpling and contortion may have taken place as the result of the creeping of the clays when the overlying sands and gravels became thickly deposited on them. It is a characteristic of the outer clays in deltas.<sup>1</sup>

At the northern margin of the North Haverstraw dissected delta terrace and again at the northern extremity of Croton point there are slopes composed of coarse deposits coming directly from the ice sheet itself. These have been preserved as they were laid down, without erosion on the one hand or a covering of newer clays or silts on the other. They have suffered little from erosion because streams have run elsewhere doing their work most efficiently on the clayey deposits remote from the loose structured, gravelly beds near the ice contact. That these slopes have not been covered by newer deposits must be explained as in general due to their not lying in a basin of deposition. Either streams have not been directed toward them or if they have been submerged such submergence was very short indeed and the waters free from transported sediment. Indeed there has been no deposition above present sea level in this region since the ice retreated from the successive stages.

Cedar pond brook in cutting down through the North Haverstraw deposit has left a subordinate terrace at about 60 feet above the sea. This is a narrow terrace traversed by the road which leads southward from the village to the brook. The remnant of the old delta on the south side of the stream rises to 60 feet or over. The occurrence of a terrace at this high made in the down cutting of the stream is suggestive of a water level at about 60 feet. The deposit at Tarrytown was built up to 60 feet above sea level. The full significance of these clues to a water level higher than that of the sea at present it is hoped to bring out in the discussion closing this report.

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<sup>1</sup>Russell, I. C. Lakes of North America. 1895. p.50. Also in U. S. Geol. Sur. Monogr. XI. 1885. Ries, H. N. Y. State Mus. Bul. 12. 1895. p.108, 118-19.